USSR

β

UDC 621.373.521.1:621.382.233

BOBROVSKIY, YU. L., BOL'SHAKOVA, N. P., OBCHINNIKOV, K. D., TSUKER, M. S.

"Superhigh Frequency Tunnel Diode Generator with a Wide Mechanical Tuning Band"

Materialy nauchno-tekhn. konferentsii. Leningr. elektrotekhn. in-t svyazi. Vyp. 2 (Materials of the Scientific and Technical Conference. Leningrad Electrotechnical Communications Institute. Vyp. 2), Leningrad, 1970, pp 204-207 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9D261)

Translation: The results of an experimental investigation of a superhigh frequency tunnel diode generator with a wide range of mechanical tuning are presented. The applicability of the quasilinear approximation for calculating the output power is demonstrated. There are two illustrations and a two-entry bibliography.

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USSR   UDC 621.355.2.035.24

BESSONOVA, T. M., BOL'SHAKOVA, N. V., ZHIVOTINSKIY, P. B.

"Variation of the Structure of Porous Plates of Lead Batteries During Operation"

Sb. rabot po khim. istochnikam toka. N.-i. akkumulyator. in-t (Collected Works
on Chemical Current Sources. Scientific Research Battery Institute), 1971,
vyp. 6, 28-34 (from RZh-Khimiya, No 6 (II), Jun 72, Abstract No 6L243)

Translation: The variations in volumetric porosity, diameters and the coeffici-
ent of convolution of the pores and also the gas filling of the positive and
negative plates during charge and discharge of starter lead batteries with
different assembly density are defined.

Rubber and Elastomers

USSR
                                                      UDC 541.15

BOLSHAKOVA, S. I., KUZMINSKIY, A. S., Scientific Research
Institute of the Rubber Industry, Moscow

"The Role of Charges in Radiochemical Changes in Rubber"

Abstract: The article describes results of a study of the effect
of additives of the electron-donor type (phenyl-β-naphthylamine)
and electron-acceptor type (chloranil), as well as their combina-
tions on the radiolysis of some rubbers (polybutadiene-nitrile
rubber and cis-polybutadiene rubber). Specimens were irradiated
with Co-60 gamma rays at a dose rate of 1 Mrad/hr and temperatures
of 77 and 300°K. The principal study of the structure and proper-
ties of the stabilized paramagnetic centers was performed by the
EPR method. Electron spectra and luminescence excitation spectra
of the irradiated specimens were also studied. Structural changes
in the material were judged from the formation of molecular bonds,
studied by the equilibrium swelling method. In rubbers irradiated
at 77°K stabilized electrons and ion radicals of the additives
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were observed along with the rubber radicals. Addition of ion
acceptors, without changing the total number of stabilized
paramagnetic centers, determines chemical changes in rubber as
a result of radiolysis. Thus, an electron acceptor and a com-
bination of electron-donor and electron-acceptor additives sen-
sitize the formation of molecular bonds in the rubbers, while an
electron donor protects the rubbers against radiation effects.
Evidently sensitization of cross-linking in electron capture by
the additive molecule is the result of an ion-molecular reaction
with the participation of double bonds of the rubber molecule.

The excitation luminescence spectra were studied on the device
of the Institute of Chemical Physics, Academy of Sciences USSR,
and the authors thank V. V. KULAKOV for staging the experiment.
The authors also thank V. G. NIKOL'SKIY for discussing the results.

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BOL'SHAKOVA, S. I., SHASHKOV, A. S., DEGTEVA, T. G., KUZ'MINSKIY, A. S.,
Scientific Research Institute of Rubber Industry, Moscow

"NMR-Study of Structural Changes in Rubber During Low-Temperature Radiolysis"

Abstract: An attempt was made to determine the radiolysis and ion excitation
effects of primary reactions occurring during the irradiation and of those of
the stabilized portion of active forms which disappear when molecular mobility
is restored in the β- or γ-relaxation area. The nuclear magnetic resonance
(NMR) method was used to ascertain chemical changes in butadiene-nitrile
rubber during low-temperature radiolysis, using a JNM-3 spectrometer at a
maximum of 35 Mrad. One table and one figure are used to illustrate the
formation of additional chemical bonds leading to closer packing of macro-
molecules when the test rubber was brought back to room temperature, thus
changing the properties of the material.

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BOL'SHEV, A. I.

"Spectra of Binary Cyclical Codes"

Informatsionnye Materialy. Nauch. Sovet po Kompleks. Probl. "Kibernetika"
AN SSSR [Information Materials, Scientific Council on the Complex Problem
of "Cybernetics," Academy of Sciences USSR], No 3(50), 1971, pp 15-22,
(Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract
No 3 V371 by V. Zinov'yev).

Translation: The problem of determination of the weighted spectrum in a
binary cyclical (n, k) code with odd n is studied. Suppose $g(x)$ and $h(x)$
are the generating and test polynomials of this code and $h(x) = p_1(x) \cdot$
$p_2(x) \ldots p_s(x)$ is its expansion into irreducible cofactors. Suppose A
is a set of polynomials of power less than k, mutually prime with $h(x)$.
Code words of the form $a(x) \cdot g(x)$, where $a(x) \in A$, will be referred to as the
natural words of the code. A theorem is produced, reducing analysis of the
weighted structure of the code to the corresponding analysis of the set of
natural words of each of the cyclical subcodes of this code. Set A forms
an Abelian group relative to the multiplication of polynomials in mod $h(x)$
1/3

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BOL'SHESOL'SKIY, P. P., NAZAROV, ..., UDC 6.........

"Nonlinear Correction Device"

USSR Author's Certificate No 287158, filed 22 Jan 69, published
14 Jan 71 (from RZh-Avtomatika, telemekhanika i vychislitel'naya
tekhnika, No. 12, 1971, Abstract No. 12A155P)

Translation: The proposed device can be used in deviation auto-
matic control systems. Known correcting devices contain parallel-
connected capacitors and resistors. Correcting devices of this
type do not provide adequate control quality in a broad range of
controlled quantity variation. The proposed correcting device is
distinguished from the known systems in that it contains 2 oppo-
sitely connected stabilitrons at the input, which are connected
in series with a scaling resistor and shunted to the zero poten-
tial bus by an additional resistor, the scaling resistor being
made in the form of series-connected resistors whose connecting
point is tied to the zero potential bus through an additional
circuit containing a resistor and a connected diode. These dif-
ferences raise the quality of the control because of the automatic
change in the control law depending on the input signal level,
thus stabilizing the operating threshold of the control circuit.
Resume
1/1

USSR

BOL'SHEV, A. I., Informatsionnye Materialy. Nauch. Sovet po Kompleks. Probl. "Kibernetika" AN SSSR, No 3(50), 1971, pp 15-22.

Abstractors Note. Another method of analysis of the weighted spectrum, leading to complete solution of the problem, was suggested in the work of Oganesyan, S. Sh. and Yagdzhyan, V. G. (RZhMat, 1971, 4V508). Both of these works were presented at the Third Symposium on the Use of Redundancy in Information Systems (Leningrad, 17-22 June, 1968), theses of reports, 24-26, 29-30. Analysis of the weighted structure of cyclical codes over arbitrary Galois fields GF(q) was recently suggested (RZhMat, 1972, 1V718).

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BOL'SHEV, A. I., Informatsionnye Materialy. Nauch. Sovet po Kompleks. Probl. "Kibernetika" AN SSSR, No 3(50), 1971, pp 15-22.

of order $\phi(h) = (2^{m_1} - 1)(2^{m_2} - 1)\ldots(2^{m_s} - 1)$, where m_i is the power of $P_i(x)$. In group A, elements $1, x, \ldots, x^{n-1}$ (mod $h(x)$) forms subgroup $\{1\}$ of index $\delta = \phi(h)/n$. Therefore, the cyclical representatives of the set of natural words of the code are representatives of neighboring classes in the expansion of A with respect to $\{1\}$. It is rather simple to find these representatives if factor group $A/\{1\}$ is a cyclical group, which occurs when δ is free of squares. Another approach is also suggested to analysis of the spectrum of natural words. Suppose $r(x)$ is the remainder from division of $g(x)$ by $h(x)$.

The following theorems are proven: 1. If $a(x) \in A$ generates a cycle, then $a^2(x) \cdot r(x)$ generates a cycle of the same weight. 2. Polynomial $r^{-1}(x)g(x)$, where $r^{-1}(x)r(x) \equiv 1(\mathrm{mod}\ h(x))$, is the item potent of this code. 3. The summary weight of the set of representatives of cycles of natural words of the code is equal to $(\phi(h) + (-1)^{s-1})/2$.

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BOL'SHEV, A. I.

UDC: 51:621.391

Translation: The symmetry group of a code is defined as the group of per-
mutations with respect to which the code is invariant when they act on the
set of code words. In this paper, the author considers permutable codes,
i. e. binary group codes whose symmetry groups are generated by arbitrary
permutations. Associated with each permutation π is a linear operator X on
a set of n-dimensional binary vectors, this operator being given by the cor-
responding permutation of code symbols. The set of operators forms a commu-
tative ring $R[X]$. The method of multiplying the elements of ring $R[X]$ by the
n-dimensional binary vectors of space V simultaneously with the commutative
law acting on V is determined by the left unitary $R[X]$-module, which is
designated V_π. Corresponding to each permutable (n,k) code is a submodule
of $R[X]$-module V_π, where the structure of the module and its submodules is

1/2

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BOL'SHEV, L. N.

"Applications of Empirical Bayes Approach"

Mezhdunar. Kongress Matematikov v Nitstse 1970 [International Congress of Mathematicians in Nitstse, 1970 -- Collection of Works], Moscow, Nauka Press, 1972, pp 48-55 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V184 by V. Pagurova).

Translation: This report is dedicated to estimation of the effectiveness of acceptance testing from the standpoint of the empirical Bayes approach. Let N be the volume of a group of products tested, n be the volume of the sample, X and Y be the number of defective products in the sample and the production group respectively and suppose the conditional distribution of X with fixed Y follows a hypergeometric distribution. A system of inequalities is produced for the unknown conditional mathematical expectations of the share of defective products (sdp) among products not belonging to the sample with fixed X. The estimate for the mean sdp in the groups accepted corresponds to the approximate value, which follows from the non-Bayes theory of Kolmogorov. Inequalities are similarly produced for the dispersion of the sdp in the groups accepted. Examples are presented and statistical conclusions are reached.
1/1

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1/2   016
UNCLASSIFIED
TITLE—CALCULATION OF THE INTENSITY OF INFECTION WITH TICK BORNE
ENCEPHALITIS IN THE POPULATION OF ZABAIKALIE —U—

PROCESSING DATE—30OCT70

AUTHOR-(05)-GORIN, O.Z., LVOV, D.K., VASENIN, A.A., BOLSHEV, L.N.,
KRUCNIC, YU.I.

COUNTRY OF INFO—USSR

SOURCE—MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI, 1970, VOL
39, NR 3, PP 259-263

DATE PUBLISHED————70

SUBJECT AREAS—BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS—ENCEPHALITIS, TICK, SEROLOGIC TEST, HEMAGGLUTINATION
INHIBITION TEST

CONTROL MARKING—NO RESTRICTIONS

DOCUMENT CLASS—UNCLASSIFIED

PROXY REEL/FRAME—2000/0222

STEP NO—UR/0358/70/039/003/0259/0263

CIRC ACCESSION NO—AP0123986

UNCLASSIFIED

2/2   016
CIRC ACCESSION NO--AP0123986

PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ON THE BASIS OF PREVIOUSLY PUBLISHED METHODS BY THE AUTHORS CALCULATION OF THE INTENSITY OF INFECTION RATE OF THE POPULATION WITH TICK BORNE ENCEPHALITIS IN THE ZABAIKALIE WAS MADE, AS WELL AS CALCULATION OF THE INFECTION RATE OF TICKS WITH THE VIRUS (9-13PERCENT). THE ANALYSIS WAS BASED ON THE DATA OF SEROLOGICAL EXAMINATION OF 6420 PERSONS BY THE HI TEST, AS WELL AS ON THE DATA OF QUESTIONING OF 26,781 SUBJECTS WITH REGARD TO TICK EXPOSURE AND ATTACK DURING THE EPIDEMIC SEASON. SPECIMENS WERE COLLECTED IN 1966-1968 IN THE CHITA REGION AND THE BURYAT ASSR. ACCORDING TO INTENSITY OF INFECTION, IT WAS FOUND POSSIBLE TO COMBINE TERRITORIES SITUATED IN DIFFERENT PHYSICO GEOGRAPHICAL AND LANDSCAPE CONDITIONS INTO 2 MAIN LANDSCAPE EPIDEMIOLOGICAL AREAS. ONE OF THEM IS DISTINGUISHED BY AN EXTREMELY LOW INTENSITY OF INFECTION (0.4-0.9PERCENT) AND INCLUDES CENTRAL ASIAN AND THE PRISELENGINSKAYA STEPPE AND NORTH ZABAIKAL MOUNTAIN TAIGA. THE OTHER AREA HAS HIGHER INTENSITY OF INFECTION (2-2.1PERCENT) AND INCLUDES TERRITORIES WITHIN THE DAURSKAYA MOUNTAIN TAIGA AND SUBTAIGA AS WELL AS THE PRIBAIKAL AND SOUTH ZABAIKAL TAIGA AND SUBTAIGA. FACILITY: IRKUTSKIY INSTITUT EPIDEMIOLOGII I MIKROBIOLOGII, MZ RSFSR. FACILITY: INSTITUT VIRUSOLOGII IM D. I. IVANOVSKOGO, AMN SSSR. FACILITY: MOSKVA MATEMATICHESKIY INSTITUT IM. V. A. STEKLOVA, AN SSSR. FACILITY: MOSKVA REPUBLIKANSKAYA SANEPIDSTANTSIYA, BURYATSKOY ASSR, ULAN-UDE.

USSR

UDC 616.988.25:313.13(571.55)

GORIN, O. Z., L'VOV, D. K., VASENIN, A. A., BOL'SHEV, L. N., KRUOPIS, Yu. I., and KORYAKOVTSEVA, K. M., Irkutsk Institute of epidemiology and microbiology, Ministry of Health RSFSR, Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow, Mathematics Institute imeni V. A. Steklov, Academy of Sciences USSR Moscow, and Republic Sanitary Epidemiological Station, Buryatskaya ASSR, Ulan-Ude

"Calculating the Intensity of Infection With Tickborne Encephalitis of the Population of Zabaykal'"

Abstract: The intensity of infection of the population with trickborne encephalitis in the Zabaykal' was calculated, and also the rate of infectation of ticks with the virus (9-13%). The analysis was based on data of serological examination of 6,420 persons by the hemogglutination test, and on data from questioning of 26,781 subjects about their exposure to tick and attacks by ticks during the epidemic season. Specimens were collected in 1966-1968 in Chitinskaya Oblast and the Buryatskaya ASSR. According to the intensity of infection, it was possible to combine the territories situated in different physical geographical and land-
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scape conditions into two main landscape-epidemiological areas. One of these areas, distinguished by an extremely low intensity of infection (0.4-0.9%), in- cludes the Central Asian and Priselenginskaya steppes and the North Zabaykal mountain taiga. The other area, with higher intensity of infection (2-2.1%), includes the territories within the Daurskaya mountain taiga and subtaiga, as well as the Pribaykal and South Zabaykal taiga and subtaiga.

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USSR

UDC 621.315.592:546.19'681

SOKOLOV, YE.B., BOL'SHEVA, YU.N., LOGINOVA, L.V., MIL'VIDSKIY, M.G.

"Behavior Of Copper During Melting Of Gallium Arsenide To A Flux"

Sb.nauch.tr. po probl. mikroelektron. Mosk. in-t elektron.tekhn. (Collection Of Scientific Works On Problems Of Microelectronics. Moscow Institute Of Electron- ics Technology), 1972, Issue 8, pp 109-112 (from RZh:Elektronika i yeye primen- iye, No 9, Sept 1972, Abstract No 9B106)

Translation: The behavior is considered of one of the most studied impurities-- copper at the boundary of melts of gallium arsenide--boric anhydride. It is assumed that with equilibrium of these two melts it is possible for extraction of the impurities in the flux to take place. It is shown that with high concen- trations of copper (and copper oxide) in the melt, it is possible to disregard extraction of boric anhydride in the melt. 4 ref. Summary.

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USSR

UDC 535.37:621.375.8

BOL'SHOV, M. A., GUZEYEV, I. D., ZYBIN, A. V., KOLOSHNIKOV, V. G., MAYOROV, I. A., NEDLER, V. V., MANDEL'SHTAM, S. L., TIMOFEYEV, Ye. F., and FILIMINOV, L. N.

"Determining Small Na Concentrations by the Fluorescence Resonance Method Using Tunable, Pulsed Dye Lasers"

Abstract: The subject of this article involves the method of fluorescence resonance in the use of tunable radiation dye lasers for detecting small concentrations of elements. Experiments designed to demonstrate the possibilities of this method in the saturation mode of resonance transition with Na as the element to be detected are described. For the excitation of the Na vapor a rhodamine laser of the 6Zh type, pumped by the second harmonic radiation of a neodymium laser, was employed. The duration of the pulses was $2 \cdot 10^{-8}$ sec, their power was 10^5 W, the width of the fluorescence line was 1 Å, and the tunable range 5600-6200 Å, with an interval of 20-30 sec between scintillations. The ZMR-3 was used as receiver. A block diagram of the equipment is given, together with a curve for the amplitude of the

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BOL'SHOV, M. A., et al., Zhurnal Prikladnoy Spektroskopii, November 1973, pp 821-824

fluorescence signal varying with time. The authors find that using a laser with high scintillation repetition rates and increasing the light power increase the sensitivity of the element detection.

USSR

AKHMANOV, S. A., et al, Pis'ma v Zhurnal eksperimental'noy i teoreticheskcy
fiziki, No. 11, 5 Dec 70, pp 547-551

investigated previously. The experiments on induced Raman scattering in self-focus-
ing media were made with the second harmonic of a neodymium laser in
single-mode and synchronization mode operation.   Anomalous broadening of
the spectrum reaching 1000 cm^{-1} in nanosecond pulses and more than 1000 cm^{-1} in
picosecond pulses were observed in carbon bisulfide in a collimated beam. It is
shown that the broadening of the spectrum of picosecond pulses in these experiments
was directly associated with phase self-modulation of the pulse in a nonlinear
medium.

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ANOMALOUS BROADENING OF SPECTRAL LINES
IN NONLINEAR LIQUIDS AND ITS EFFECT ON STIMULATED
SCATTERING PROCESSES

Bol'shov, M. A.; Venkin, G. V.; Zhilkin, S. A.; Nurminskiy, I. I.

Results of an experimental investigation of the spectral structure of laser radiation passing through a self-focussing liquid are reported. For complete isolation of the generator from the scattering medium the second harmonic of a neodymium laser is employed as radiation source. The generator can operate under incoherent mode or mode-locked conditions. The spectral structure of the radiation was investigated in the direction of the incident light as well as at an angle of 180°. Broadening of a quasicontinuous nature and broadening involving a set of discrete lines, the distance between which was, as a rule, not related to the incident radiation spectrum, are recorded. An analysis of the experimental results shows that the spectral line broadening may be ascribed to interaction between space and time modulation of the beam during its self-focussing.

AP0038021

Some data pertaining to stimulated combinational scattering under conditions of anomalous broadening of a laser pulse spectrum are reported. In particular the strong sensitivity of the scattering indicatrix to modulation of the initial radiation is noted.

19731062

USSR $\mathcal{B}$ UDC:621.313.12:539.172.12

BOL'SHOV, V. I., DUBININ, A. A., DMITRIYEV, V. M., KAPCHIGASHEV,
S. P., KON'SHIN, V. A., MATUSEVICH, YE. S., POLIVAKSKIY, V. P.,
PUPKO, V. Ya., REGUSHEVSKIY, V. I., STAVISSKIY, Yu. Ya., and
YUR'YEV, Yu. S.

"Physical Investigation of the Target in an Electronuclear
Neutron Flux Generator"

Abstract: Fluxes of thermal neutrons on the order of 10^{17}-10^{18}
n/cm^2·sec open new possibilities for investigations in many
areas of science and technology. There is great interest in
the study of the possibility for increasing neutron fluxes by
using the process of multiple neutron birth upon interaction
of nucleons with energies in the hundreds of MeV with heavy
nuclei. This article presents the results of experiments and
calculations concerning the neutron-physical characteristics

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USSR

BOL'SHOV, V. I., DUBININ, A. A., DMITRIYEV, V. M., KAPCHIGASHEV,
S. P., KON'SHIN, V. A., MATUSEVICH, Y. E. S., TOLIVANSKIY,
V. P., TUPKO, V. Ya., REGUSHEVSKIY, V. I., STAVISSKIY, Yu. Ya.,
YUR'YEV, Yu. S., Moscow, Atomnaya Energiya, Vol 28, No 5, May
70, pp 388-392

of the target in an electronuclear device for the generation
of neutron fluxes. The yield of neutrons and distribution of
the number of reactions in a heavy target and moderator are
measured. The space-energy distribution of neutron flux in
the moderator is calculated and the accumulation of transuranium
elements in a system with high neutron flux is computed.

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1/2   017
UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--PHYSICAL STUDIES OF THE TARGET OF AN ELECTRONUCLEAR NEUTRON FLUX
  GENERATOR -U-
AUTHOR--BOLSHOV, V.I.

COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. 1970, 28(5), 388-93

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NEUTRON FLUX, SYNCHROCYCLOTRON, NEUTRON ENERGY DISTRIBUTION,
  HALF LIFE, CAPTURE CROSS SECTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/0595
                              STEP NO--UR/0089/70/028/005/0388/0393
CIRC ACCESSION NO--AP0137680
                    UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0137680

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RESULTS ARE PRESENTED ON THE CHARACTERISTICS OF TARGETS FOR GENERATING N AT THE OIYAI SYNCHROCYCLOTRON USING P OF 660 MEV. THE P BOMBARD EITHER A PB BLOCK OR A WATER TANK CONTG. A PB TARGET. THE TOTAL N YIELD WAS OF 11 PLUS OR MINUS 2 N-P FOR A TARGET 30 CM LONG AND 11.2 CM IN DIAM. MAX. TOTAL N FLUX FOR THE P BEAM OF 1 P-SEC WAS OF 1.8 TIMES 10 PRIME NEGATIVE2 N-CM PRIME2 SEC. SPATIAL ENERGY DISTRIBUTIONS OF N IN ZR HYDRIDE AND ZR DEUTERIDE AS MODERATORS WERE DETD. WITH THE N BEAMS AVAILABLE, HALF LIVES AND N CAPTURE CROSS SECTIONS WERE MEASURED.

UNCLASSIFIED

USSR

UDC 532

BOL'SHOV, V. P.

"Steady-State Method of Studying Diffusion in Liquids"

V sb. Diffuziya v gazakh i zhidkostyakh (Diffusion in Gases and Liquids -- Collection of Works), Alma-Ata, 1972, pp 86-91 (from RZh-Fizika, No 1, Jan 73, Abstract No 1Ye122)

Translation: An installation for measuring the diffusion coefficient in a liquid by the steady-state method is described. Diffusion is carried out through a porous membrane washed by a slow flow of the liquid being studied. The concentration was measured with a Pulfrich refractometer. The constant of the device was determined on the basis of known diffusion coefficient data. The diffusion coefficient of glycerin and ethylene glycol in water at 25°C was measured. 11 ref. P. Ye. Suyetin.

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1/2   U38   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--OPTICAL PROPERTIES OF CUBIC NIOBIUM,TITANIUM ALLOYS IN THE VISIBLE
AND NEAR INFRA RED SPECTRUM -U-

AUTHOR-(02)-BOLSHOVA, K.V., LEKSINA, I.YE.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, APR. 1970, 29, (4), 777-781

DATE PUBLISHED----APR70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--NIOBIUM ALLOY, TITANIUM ALLOY, LIGHT TRANSMISSION, DIELECTRIC
CONSTANT, ALLOY COMPOSITION, CRYOGENIC PROPERTY, ENERGY BAND STRUCTURE,
CRYSTAL ORIENTATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/0450   STEP NO--UR/0126/70/029/004/0777/0781

CIRC ACCESSION NO--AP0129675
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0129675
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE OPTICAL PROPERTIES OF NB,TI
  ALLOYS OF A WIDE RANGE OF COMPOSITIONS WERE STUDIED IN THE VISIBLE AND
  NEAR INFRA RED SPECTRUM (0.4-2.5 MU M) AND THE RESULTS WERE INTERPRETED
  IN TERMS OF THE LIGHT TRANSMISSION AND DIELECTRIC CONSTANT AT
  77-300DEGREESK. AS IN THE CASE OF PURE NB, THESE PARAMETERS HAD
  SINGULARITIES ASSOCIATED WITH INTERBAND TRANSITIONS CLOSE TO THE (110)
  BRAGG PLANES; THE CORRESPONDING BANDS WERE NOT PARTICULARLY DEPENDENT ON
  COMPOSITION AND TEMP. THE ALLOYS ALSO EXHIBITED A NUMBER OF NEW BANDS
  NOT FOUND IN PURE NB; THESE APPEARED MOST SHARPLY AT LIQUID N TEMP., AND
  WERE ATTRIBUTED TO TRANSITIONS CLOSE TO THE (100) AND (111) PLANES.

UNCLASSIFIED

USSR

B

UDC 669.017:[537+535]

BOL'SHOVA, K. V., and LEKSINA, I. YE., Physics Institute imeni P. N. Lebedev

"Optical Properties of Cubic Nb-Ti Alloys in the Visible and Infrared Spectrum"

Abstract: The optical constants n and $\varkappa$ (n--i $\varkappa$ --index of refraction) of electro-lytically polished samples of cubic beta-solution Nb-Ti alloys (25, 52, and 85 at % Nb) at room temperature and at the temperature of liquid nitrogen were mea-sured in the 0.40-2.6 micron region of the spectrum. On the basis of these data and the characteristics of conductivity of electrons of the indicated alloys, values of light conductivity and dielectric permeability associated with interzone transitions were obtained.

It was established that the main band in light conduction and the region of anomalous dispersion corresponding to it, were the same for the investigated alloys as for pure Nb in the region of 2-3 ev, and were associated with interzonal transitions near the Bragg plane $\{110\}$. The position and width of this band have little dependence on the alloy concentration and temperature.

In addition, for alloys, in comparison with pure Nb, a new series of bands was found whose presence is a function of alloy composition. These bands are more evident at the liquid nitrogen temperature. A hypothesis was made that the appear-ance of the new bands can be linked with interzonal transitions close to the Bragg

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BOL'SHOVA, K. V., and LEKSINA, I. YE., Fizika Metallov i Metallovedeniye, Vol 29, No 4, Apr 70

planes $\{100\}$ and $\{111\}$.

The authors thank G. P. Motulevich for his assistance.

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USSR

UDC 543.01:546.76:546.681:546.19

DOLMANOVA, I.,F., BOLSHOVA, T. A., SHEKHOVTSOVA, T. N., and PESHKOVA, V. M.,
Moscow State University imeni M. V. Lomonosov

"Kinetic Method for Determining Chromium Traces in Gallium Arsenide"

Abstract: Column extraction and ion exchange chromatography are used to
separate traces of Cr from the major elements $GaAsO_3$, and a Cu-Co-Ni mixture.
The sample is dissolved in nitric acid, oxidizing the arsenic to arsenic
acid. The arsenic acid is carried through the column while the Cr(III) is
adsorbed. The Cr (III) is subsequently removed from the column with 3 N NCl.
Interferring ions of Cu (II), Co(II), and Ni(II)--were removed from the acid
solution by extraction with dithizone in CCl_4 for 20-30 min on a mechanical
shaker. Concentrations of Cr(III)--as the dithizonate in the aqueous phase--
were determined from the oxidation by H_2O_2 of 0-dimethoxybenzidine if the con-
centrations were greater than 10^{-3} micrograms/ml and of o-dimethoxybenzidine
- γ-picoline for concentrations of 10^{-3} to 10^{-5}. The reaction was followed
on a spectrophotometrically at $\lambda_{max} = 350$ nm.

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Extraction and Refining

USSR   UDC 543.432

ALIMARIN, I. P., BOL'SHOVA, T. A., and YERSHOVA, N. I., Chair of Analytical
Chemistry

"Gallium Extraction With Tri-n-butyl Phosphate From Ammonium Thiocyanate
Solutions"

Abstract: The article describes results of a study of the conditions and
mechanism of gallium extraction with tri-n-butyl phosphate from ammonium
thiocyanate solutions. Microgram quantities of gallium were determined
photometrically with 1-(2)-pyridylazoresorcinol as the reagent, and milli-
gram quantities were determined complexometrically. The thiocyanate ion
and chloride ion concentrations were determined argentometrically, and the
concentration of chlorides in the presence of thiocyanate ions was determined
by a method based on the oxidation of thiocyanate ions with hydrogen peroxide
in an alkaline medium. The extraction of gallium was studied as a function

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USSR

ALIMARIN, I. P., et al., Vestnik Moskovskogo Universiteta, Seriya II --
Khimiya, Vol 11, No 5, Sep-Oct 70, pp 568-572

of thiocyanate ion concentration, aqueous phase acidity, and metal concentra-
tion. Chemical analysis data, as well as results obtained by the equilibrium
shift method, indicate that in the organic phase the gallium-to-thiocyanate
ion ration is 1 : 3.

2/2

- 26 -

USSR

UDC: 51:801

BOL'SHOY, A. A.

"The LR(R)-Property and Equivalent Transformations of Grammars"

Sb. rabot Vychisl. tsentra Mosk. un-ta (Collected Works of the Computing Center of Moscow University), 1971, vyp. 17, pp 9-12 (from RZh-Kibernetika, No 4, Apr 72, Abstract No 4V609)

Translation: The author considers transformations of an LR(k) grammar (RZhMat, 1967, 1V390) to an equivalent grammar, where the transformations conserve the LR(k) property, and where this property is not retained as well. For every LR(k) grammar, a method is indicated for constructing an equivalent LR(k) with productions of the form $S \to \lambda$, $A \to BC$, $A \to a$, where S is the initial symbol, A, B and C are nonterminal, and a is a terminal symbol, and λ is the empty word. A. Maslov.

1/1

Organ and Tissue Transplantation

FAL'KOVSKIY, G. E., KAZAKOV, E. N., YARLYKOVA, Ye. I., ASTRAKHANTSEVA, G. I.,
ALEKSEYEVA, L. A., KOBKOVA, I. D., SOKOLOV, M. V., GALANKIN, I. Ye., BOL'SHUKHINA,
L. A., and GUDKOVA, R. G., Institute of Cardiovascular Surgery imeni A. N. Bakulev,
Academy of Medical Sciences USSR, Moscow

"The fate of an Heterotopic Heart Allotransplant"

Abstract: Donor hearts transplanted to the iliac arteries of recipient dogs
survived up to 16 days. The causes of cessation of transplant function during
the first 48 hours were surgical complications (death of the recipient from the
anesthetic, hemorrhages from the sutures, thrombosis). In the absence of such
complications, the transplants continued to function 3 to 12 days average, (4.75
days) when immunodepressants were not used, and 3 to 8 days (average, 6.16 days)
when they were. Cardiac arrest was preceded by arrhythmias, a decrease in vol-
tage of the ventricular complex, and increase in lymphocytes in the peripheral
blood following leukopenia. Immunomorphological changes in the recipient's lym-
phatic system preceded the morphological signs of rejection in the transplant
(pronounced lymphoid-histiocyte infiltration, changes in the arteris, and meta-
bolic disturbances in the myocardium).
1/1

USSR

TASHTAEVA, ... G., BOL'SHOV, Yu. V., and AKLAXKOV. I. A. ....
Physico Chemical Institute imeni L. Ya. Karpov, Moscow, ...
Chemistry

"Adsorption of Vapors of Noble Metals on a Semiconductor ....

Moscow, Zhurnal Fizicheskoy Khimii, Vol 44, No 7, Jun 70 ....

Abstract: Au, Pd, and Ag were adsorbed ... on a semiconductor ....
the vapor phase on heating electrically with ... .
820° in an evacuated glass vessel which also co...........
eric conductivity of ZnO increased considerably ....
ations of the noble metals, but dropped after ove...........
stopped. The decrease in conductivity was observed when ....
It was not due to adsorption of the noble ... .
... established in experiments in which Pd conducting ....
... ... of noble metal atoms on the surface of ZnO ... .
... ... on this surface.

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USSR   UDC: 621.396.67:624.97

BOL'SHUNOV, F. F., VANYUSHIN, V. N., DUBROVIN, V. F., DMITRIYEVSKIY, N. M.,
POLINOV, Yu. S., REZNIK, A. P.

"Antenna-Mast Support"

Translation: The proposed support consists of interconnected elements,
a support framework mounted on a truck platform, an antenna with attached
feeder channel, and mechanisms for folding and unfolding the support. To
simplify folding and unfolding of the support, the feeder channel is made
in the form of individual sections which are securely fastened to the
elements of the mast and hinged together.

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USSR

UDC: 539.3/.5

LEONT'YEVA, A. V., STROILOV, Yu. S., LAKIN, Ye. Ye., SOL'SHUTKIN, D. N.

"Singularities of Plastic Deformation of Solidified Gases"

Sb. nauchn. tr. Fiz.-tekhn. in-t nizk. temperatur AN USSR (Collected Scientific Works of the Physicotechnical Institute of Low Temperatures, Academy of Sciences of the UkrSSR), 1969, vyp. 5, pp 242-254 (from RZh-Fizika, No 9, Sep 70, Abstract No 9Ye591)

Translation: Plastic deformation of crystalline methane and argon was studied by the method of stress relaxation and by plotting tensile stress-strain diagrams. The temperature regions were determined in which the deformation of methan and argon is dependent on mechanisms with sharply differing activation energies. The results are compared with data for other solidified gases. It was found that the greater the energy contribution from translational and libration zero-point vibrations, the lower the temperatures will be at which transition takes place from the Peierls mechanism, which generally controls low-temperature deformation of solidifying gases, to more energetic mechanisms. In accordance with these transition points, a number of molecular crystals were constructed which are in reasonable

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agreement with the De Bur [sic] series with respect to the quantum number λ,
which is proportional to the contribution which the energy of zero-point vibra-
tions makes toward the bonding energy. Authors' abstract.

2/2

1/2   054   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--INITIAL STAGE IN CAVITATION DAMAGE TO LEAD -U-

AUTHOR-(03)-KROT, YU.YE., BOLSHUTKIN, D.N., PROKHVATILOV, A.I.

COUNTRY OF INFO--USSR

B

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, MAR. 1970, 29, (3), 651-652

DATE PUBLISHED----MAR70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--LEAD, ULTRASONIC IRRADIATION, CRYSTALLIZATION, WATER, LIQUID
   OXYGEN, TEST METHOD, CAVITATION, SURFACE PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/0205   STEP NO--UR/0126/70/029/003/0651/0652

CIRC ACCESSION NO--AP0129461
                      UNCLASSIFIED

CIRC ACCESSION NO--AP0129461

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INITIAL STAGES IN THE
CAVITATIONAL EROSION OF PB WERE STUDIED BY A METALLOGRAPHIC METHOD, WITH
SPECIAL REF. TO THE TYPE OF CHANGE MOST EVIDENT ON THE SURFACE OF THE
METAL (THE CAVITATION WAS INDUCED BY MEANS OF ULTRASOUND, BOTH WATER AND
LIQUID O BEING USED AS MEDIA).   THERE APPEARED TO BE A DIFFERENT
MECHANISM OF CAVITATION IN LIQUID O AS COMPARED WITH WATER IN THE
INITIAL STAGES, THE DAMAGE OCCURRING WITHIN THE GRAIN RATHER THAN AT
GRAIN BOUNDARIES. THIS DIFFERENCE WAS ATTRIBUTED TO RECRYSTALLIZATION
PROCESSES WHICH DIFFERED SUBSTANTIALLY IN THE TWO CASES FOR REASONS OF
TEMP.

UNCLASSIFIED

USSR

UDC 537.311.33

BOLTAKS, B.I., SAVIN, E.P.

"Effect Of Neutron Irradiation On The Electrical Properties Of Indium Arsenide"

V sb. Radiatsion. fiz. nemet. kristallov (Radiation Physics Of Nonmetal Crystals--
Collection Of Works), Minsk, Nauka i tekhn., 1970, pp 116-123 (from
RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1B44)

Translation: It is shown that during irradiation of n-type InAs, the concen-
tration of electrons is increased but irradiation of p-type specimens leads to
a decrease of the concentration of holes, and with a certain dose of neutron
(depending on the initial concentration of holes in the specimen) p-type material
is converted to n-type. With sufficiently large integrated fluxes, the concen-
tration of electrons does not depend on their magnitude, which attains a limiting
value of $\sim 2 \cdot 10^{18}$ cm^{-3} (at room temperature). The electrical characteristics
(electrical conductivity and Hall effect) of irradiated specimens were investig-
ated in the temperature range 80--600° K, and annealing of radiation defects
was also studied. On the basis of the results obtained, the problem is consider-
ed of the nature of the defects originating during irradiation and their effect
on the conventration and mobility of current carriers. 5 ill. 6 ref. Summary.

1/1

USSR β UDC 621.315.592

BAKHADYRKHANOV, M. K., BOLTAKS, B. I., KULIKOV, G. S., PEDYASH,
E. M., Institute of Semiconductors, Leningrad, Academy of
Sciences USSR

"Diffusion, Solubility, and Electrical Properties of Zinc in
Silicon"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 4, No 5, 1970,
pp 873-878

Abstract: The diffusion and solubility of zinc in silicon and
its effect on the electrical properties of silicon were studied.
It was established that the diffusion of zinc in silicon has
complex dissociative nature, and the diffusion coefficient in
the 1,100-1,300°C range varies from 10^{-7} to 10^{-5} cm^2/sec. The
life of zinc at a node and an internode of the silicon lattice
calculated from the rise in concentration level with annealing
time at 1,200°C is 10^4 and 10^{-3} sec, respectively. The solu-
bility is of a retrograde nature with a peak at $1.5.10^{-6}$ cm^{-3}
at 1,270°C. Zinc introduces three acceptor levels in the for-
bidden zone of silicon. During the process of decay of the
1/3

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BAKHADYRKHANOV, M. K., et al., Fizika i Tekhnika Poluprovodnikov,
Vol 4, No 5, 1970, pp 873-878

zinc-silicon solid solution, two donor levels -- 0.1$\pm$0.03 and
0.4$\pm$0.03 ev -- obviously connected with the internodal zinc
appear. The authors calculate the chemical potential level of
silicon alloyed with zinc and demonstrate the possibility of
obtaining the compensated material in a broad range of current
carrier concentrations.

The conditions of obtaining silicon with a given specific re-
sistance are calculated inasmuch as zinc in silicon is an acceptor
and inasmuch as a compensated material can be obtained by intro-
ducing zinc into electronic silicon. The experimental data from
the electrical measurements (carrier concentration, carrier mo-
bility, specific resistance) before and after alloying the sili-
con with zinc and also for the control samples annealed without
zinc are compared with the calculated data. It is noted that the
concentration of electrically active zinc atoms is ~3 orders less
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USSR

than the solubility determined from radioactive measurements. A significant part of the zinc atoms apparently settle in the dislocations that occur, for example, for cobalt in silicon or they enter into the composition of electrically inactive complexes. The experimental data compare well with the calculated data except for converged samples, and it is assumed that these divergences are the result of incorrect calculations.

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1/2   031   UNCLASSIFIED   PROCESSING DATE--18SEP70
TITLE--DIFFUSION, SOLUBILITY, AND ELECTRICAL PROPERTIES OF COBALT IN
    SILICON -U-
AUTHOR-(03)-BAKHADRYKHANOV, M.K., BOLTAKS, B.I., KULIKOV, G.S.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(1) 181-9

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--COBALT, SILICON, SOLUBILITY, PHYSICAL DIFFUSION, POTENTIAL
    DIFFERENCE, METAL COATING, ELECTRIC PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1980/0242   STEP NO--UR/0181/70/012/001/0181/0189

CIRC ACCESSION NO--AP0048521
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0048521
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A COMPLEX INVESTIGATION WAS
   CARRIED OUT OF DIFFUSION, SOLY., AND THE EFFECT OF CO ON THE ELEC.
   PROPERTIES OF SI. DIFFUSION HAS A COMPLEX DISSOCIATIVE CHARACTER. THE
   DIFFUSION COEFF. OF CO IN SI IS OF THE ORDER OF 10 PRIME NEGATIVE5 MINUS
   10 PRIME NEGATIVE4 CM PRIME2 SEC AT 1000-1300DEGREES. SOLY. HAS A
   RETROGRADE CHARACTER WITH A MAX. OF 2 TIMES 10 PRIME16 ATOMS-CM PRIME3
   AT 1240DEGREES. CO IMPURITIES ARE PRESENT IN SI IN THE FORM OF
   ACCEPTORS AND CREATE 5 LEVELS IN THE FORBIDDEN BAND: E SUBV MINUS E
   SUBA1 EQUALS 0.10 PLUS OR MINUS 0.02 EV; E SUBV MINUS E SUBA2 EQUALS
   0.30 PLUS OR MINUS 0.03 EV; E SUBC MINUS E SUBA3 EQUALS 0.22 PLUS OR
   MINUS 0.03 EV; E SUBV MINUS E SUBA4 EQUALS 0.37 PLUS OR MINUS 0.2 EV;
   AND E SUBV MINUS E SUBA5 EQUALS 0.52 PLUS OR MINUS 0.02 EV. CALCN. WAS
   MADE OF THE LEVEL OF CHEM. POTENTIAL OF SI DOPED WITH CO, AND THE
   POSSIBILITY IS SHOWN OF OBTAINING COMPENSATED MATERIAL IN A BROAD
   INTERVAL OF CONCNS. OF CURRENT CARRIERS.

UNCLASSIFIED

1/2   051   UNCLASSIFIED   PROCESSING DATE--02OCT70
TITLE--EFFECT OF NEUTRON IRRADIATION ON THE DIFFUSION OF ZINC IN INDIUM
   ARSENIDE -U-

AUTHOR-(02)-BOLTAKS, B.I., SAVIN, E.P.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(3), 567-8

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NEUTRON IRRADIATION, ZINC, RADIATION EFFECT, SINGLE CRYSTAL,
   ELECTRON MOBILITY, ELECTROMOTIVE FORCE, INDIUM ARSENIDE, ELECTRIC
   CONDUCTIVITY, METAL DIFFUSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0819   STEP NO--UR/0449/70/004/003/0567/0568

CIRC ACCESSION NO--AP0105724
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0105724

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SINGLE CRYSTAL N-TYPE INAS SAMPLES
WITH 5 TIMES 10 PRIME16 ELECTORNS-CM PRIME3 AND A MOBILITY OF 25,000 CM
PRIME2-V SEC WERE IRRADIATED WITH 5 TIMES 10 PRIME16 FAST NEUTRONS-CM
PRIME2 AT 150DEGREES IN A REACTOR BEAM HOLE. AFTER IRRADN., THE
ELECTRON CONCN. WAS 2 TIMES 10 PRIME17 CM PRIME3. ZN WAS DIFFUSED INTO
THE SAMPLES IN AR FILLED SIO SUB2 TUBES AT 800DEGREES; THE
CONCENTRATIONAL ZN DISTRIBUTION WAS DETD. BY MEASURING THE ELEC. COND.
OF THE DIFFUSION LAYER WITH SUBSEQUENT REMOVAL OF THIN LAYERS AND BY THE
SIMULTANEOUS DETN. OF THE COND. TYPE THROUGH THE THERMAL EMF. SIGN.
AFTER IRRADN., THE DEPTH OF THE P-N JUNCTION WAS 60 MU LESS THAN BEFORE,
IMPLYING A DECREASED DIFFUSION COEFF. THE EFFECT IS EXPLAINED BY
ASSUMING A DISSOCIATIVE DIFFUSION MECHANISM, WHERE THE ATOMS ARE MOVING
THROUGH INTERSTICES, WITH SUBSEQUENT CAPTURE BY VACANCIES.

UNCLASSIFIED

TITLE--EFFECT OF THERMAL DEFECTS ON THE LIFETIME OF CURRENT CARRIERS IN _
   GERMANIUM -U-

AUTHOR-(02)-BOLTAKS, B.I., KONOROVA, L.F.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(4), 754-9

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--GERMANIUM SEMICONDUCTOR, THERMAL EFFECT, CRYSTAL DEFECT,
   CARRIER DENSITY, ELECTRON SPECTRUM, TEMPERATURE DEPENDENCE,
   PHOTOMAGNETIC EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/0854   STEP NO--UR/0449/70/004/004/0754/0759

CIRC ACCESSION NO--AP0131444

CIRC ACCESSION NO--AP0131444
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF THERMAL DECTS
OBTAINED IN N-GE (N EQUALS 3.5 TIMES 10 PRIME13-CM PRIME3, TAU EQUALS
250 MINUS 300 MU SEC) ON THE LIFETIME OF MAJORITY AND MINORITY CARRIERS
AND ON THE ENERGY SPECTRUM OF ELECTRONS WAS STUDIED. THERMAL DECTS WERE
GENERATED DURING TEMPERING AT 673-773DEGREESK WITH A RATE, V EQUALS
100DEGREES-SEC AND AT 773-1073DEGREESK AT V EQUALS 300DEGREES-SEC. THE
THERMAL TREATMENT WAS CARRIED OUT IN WET O, ACTING AS A GETTER FOR CU
IMPURITY ATOMS. PRIOR TO THE MEASUREMENT, THE SAMPLES WERE POLISHED AND
ETCHED IN BOILING 30PERCENT H SUB2 O SUB2. LIFETIMES WERE CALCD. FROM
EXPTL. DATA ON THE STEADY STATE PHOTOMAGNETIC EFFECT ON PHOTOCOND., AND
IN HALL COEFF. IN W WIDE RANGE OF TEMPS. WITH GE SAMPLES SUBJECTED TO
THERMAL TREATMENT. THE DEPENDENCE OF TAU ON THE TEMPERING TEMP., T SUBT
WAS DETD. AS TAU SIMILAR EXP (DELTA E SUB0-K T SUBT) WITH DELTA E SUB0
EQUALS 1 PLUS OR MINUS 0.1 EV, WHEREBY THE COND. REMAINED CONST. THE
VARIATION OF TAU IS ASCRIBED TO GENERATION OF RECOMBINATION CENTERS WITH
A CONCN. N, WHEREBY TAU IS SIMILAR TO 1 OVER N. N INCREASES WITH THE
RATE OF TEMP. RISE DURING TEMPERING. DURING HEAT TREATMENT OF N SAMPLES
AT 673-973DEGREESK, THE INCREASE OF TAU WITH T SUBT IS ACCOMPANIED BY A
DECREASE OF COND. DURING TREATMENT AT 973-1073DEGREESK, THE SAMPLES
BECOME P TYPE AND TAU DECREASES WITH INCREASING T SUBT, WHEREBY THEIR
COND. DIMINISHES. ON SLICING TEMPERED SAMPLES, IT IS REVEALED THAT AT
673-773DEGREESK THE THERMAL DEFECTS ARE UNIFORMLY DISTRIBUTED, WHILE
THOSE GENERATED AT 673-1073DEGREESK HAVE A HIGHER CONCN. IN THE SURFACE
LAYERS.

CIRC ACCESSION NO--AP0131444

ABSTRACT/EXTRACT--THE TEMP. DEPENDENCE OF MINORITY CARRIER LIFETIME, TAU
SUB1, AT 100-300DEGREESK IS SIGNIFICANTLY AFFECTED BY T SUBT. THE
ACTIVATION ENERGIES IN THE DIFFERENT TEMP. RANGES ARE ATTRIBUTED TO THE
DIFFERENT ENERGIES OF RECOMBINATION CENTERS. THE RATIO A EQUALS TAU
SUB2 OVER TAU SUB1 (TAU SUB2 IS THE MAJORITY CARRIER LIFETIME) IS CLOSE
TO 1 AT ROOM TEMP., BUT GROWS WITH DECREASING TEMP., REACHING SIMILAR TO
100 AT 100DEGREESK FOR SOME SAMPLES. FOR N SAMPLES, A GROWS WITH T SUBT
ON ACCOUNT OF THE INCREASED O. OF TRAPS. ABOVE 773DEGREESK., THE R SUBH
(1-T) RELATION SHIFT TO HIGHER R SUBH WITH INCREASING TEMP., WHEREBY THE
N SAMPLES ARE COMPENSATED. A SHALLOW DONOR LEVEL IS REVEALED IN N
SAMPLES: E SUBC MINUS E SUB3 EQUALS 0.05 EV. TWO ACCEPTOR LEVELS, E
SUBV PLUS E SUB4 EQUALS 0.15 EV AND E SUBV PLUS E SUB5 EQUALS 0.05 EV,
ARE EVALUATED FROM R SUBH MINUS 1-T RELATIONS. THE UNUSUAL TEMP.
DEPENDENCE OF TAU SUB1 OF P SAMPLES WITH A MAX. AND A PLATEAU IS
EXPLAINED BY A MODEL IN WHICH THE RECOMBINATION CENTERS ARE VACANCIES
WITH ZERO, 1, OR 2 NEG. CHARGES. THE INCREASE NO. TAU OF SAMPLES HEATED
AT 823-973DEGREESK IS ASCRIBED TO GENERATION OF DONOR LEVELS INTRODUCED
BY GE INTERSTITIALS WITH AN ACTIVATION ENERGY OF 0.05 EV. FIVE ACCEPTOR
AND 1 DONOR LEVELS IN ALL CAN BE OBSD., DEPENDING ON T SUBT.
FACILITY: INST. POLUPROV., LENINGRAD, USSR.

UNCLASSIFIED

TITLE--DIFFUSION, SOLUBILITY, AND ELECTRICAL PROPERTIES OF ZINC IN SILICON
-U-
AUTHOR-(04)-BAKHADYRKHANOV, M.K., BOLTAKS, B.I., KULIKOV, G.S., PEDYASH,
E.M.
COUNTRY OF INFO--USSR

SOURCE--LENINGRAD, FIZIKA I TEKHNIKA POLUPROVODNIKOV, VOL 4, NO 5, 1970,
PP 873-878
DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--METAL DIFFUSION, SOLUBILITY, ZINC, SILICON, FORBIDDEN ZONE,
SOLID SOLUTION, COBALT, ELECTRIC PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/1261   STEP NO--UR/0449/70/004/005/0873/0378

CIRC ACCESSION NO--AP0136669
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0136669

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DIFFUSION AND SOLUBILITY OF
ZINC IN SILICON AND ITS EFFECT ON THE ELECTRICAL PROPERTIES OF SILICON
WERE STUDIED.   IT WAS ESTABLISHED THAT THE DIFFUSION OF ZINC IN SILICON
HAS COMPLEX DISSOCIATIVE NATURE, AND THE DIFFUSION COEFFICIENT IN THE
1,100-1,300DEGREESC RANGE VARIES FROM 10 PRIME NEGATIVE7 TO 10 PRIME
NEGATIVE6 CM PRIME2-SEC.   THE LIFE OF ZINC AT A NODE AND AN INTERNODE
OF THE SILICON LATTICE CALCULATED FROM THE RISE IN CONCENTRATION LEVEL
WITH ANNEALING TIME AT 1,200DEGREESC IS 10 PRIME4 AND 10 PRIME NEGATIVE3
SEC, RESPECTIVELY. THE SOLUBILITY IS OF A RETROGRADE NATURE WITH A PEAK
AT 1.5.10 PRIME NEGATIVE6 CM PRIME NEGATIVE3 AT 1,270DEGREESC.   ZINC
INTRODUCES THREE ACCEPTOR LEVELS IN THE FORBIDDEN ZONE OF SILICON.
DURING THE PROCESS OF DECAY OF THE ZINC SILICON SOLID SOLUTION, TWO
DONOR LEVELS, 0.1 PLUS OR MINUS 0.03 AND 0.4 PLUS OR MINUS 0.03 EV,
OBVIOUSLY CONNECTED WITH THE INTERNODAL ZINC APPEAR.   THE AUTHORS
CALCULATE THE CHEMICAL POTENTIAL LEVEL OF SILICON ALLOYED WITH ZINC AND
DEMONSTRATE THE POSSIBILITY OF OBTAINING THE COMPENSATED MATERIAL IN A
BROAD RANGE OF CURRENT CARRIER CONCENTRATIONS.   THE CONDITIONS OF
OBTAINING SILICON WITH A GIVEN SPECIFIC RESISTANCE ARE CALCULATED
INASMUCH AS ZINC IN SILICON IS AN ACCEPTOR AND INASMUCH AS A COMPENSATED
MATERIAL CAN BE OBTAINED BY INTRODUCING ZINC INTO ELECTRONIC SILICON.
THE EXPERIMENTAL DATA FROM THE ELECTRICAL MEASUREMENTS (CARRIER
CONCENTRATION, CARRIER MOBILITY, SPECIFIC RESISTANCE) BEFORE AND AFTER
ALLOYING THE SILICON WITH ZINC AND ALSO FOR THE CONTROL SAMPLES ANNEALED
WITHOUT ZINC ARE COMPARED WITH THE CALCULATED DATA.

UNCLASSIFIED

CIRC ACCESSION NO--AP0136669
ABSTRACT/EXTRACT--IT IS NOTED THAT THE CONCENTRATION OF ELECTRICALLY
ACTIVE ZINC ATOMS IS SIMILAR TO 3 ORDERS LESS THAN THE SOLUBILITY
DETERMINED FROM RADIOACTIVE MEASUREMENTS.   A SIGNIFICANT PART OF THE
ZINC ATOMS APPARENTLY SETTLE IN THE DISLOCATIONS THAT OCCUR, FOR
EXAMPLE, FOR COBALT IN SILICON FOR THEY ENTER INTO THE COMPOSITION OF
ELECTRICALLY INACTIVE COMPLEXES.   THE EXPERIMENTAL DATA COMPARE WELL
WITH THE CALCULATED DATA EXCEPT FOR CONVERGED SAMPLES, AND IT IS ASSUMED
THAT THESE DIVERGENCES ARE THE RESULT OF INCORRECT CALCULATIONS.
FACILITY: INSTITUTE OF SEMICONDICTORS, LENINGRAD, ACADEMY OF SCIENCES
USSR.

UNCLASSIFIED

TITLE--STUDY OF COMPOUNDS OF TIN WITH GROUP IV ELEMENTS BY THE NUCLEAR
  GAMMA RESONANCE METHOD -U-
AUTHOR-(04)-PEREPECH, K.V., SEREGIN, P.P., SHIPATOV, V.T., BOLTAKS, B.I.

COUNTRY OF INFO--USSR

SOURCE--IZVEST. AKAD. NAUK SSSR, NEORG. MATERIALY, APR. 1970, 6, (4),
  818-819
DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--GAMMA RADIATION, TIN COMPOUND, CHEMICAL BONDING, SPECTROSCOPIC
  ANALYSIS, SELENIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1448   STEP NO--UR/0363/70/006/004/0818/0819

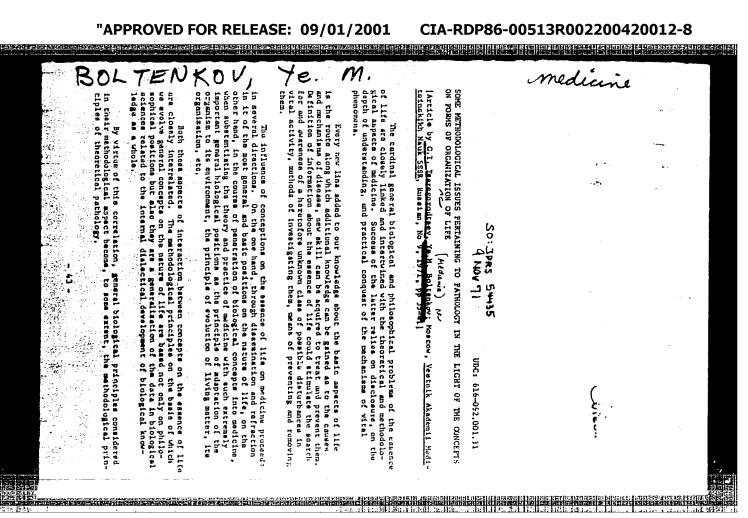CIRC ACCESSION NO--AP0130381
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0130381
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE NUCLEAR GAMMA RESONANCE
  SPECTRA OF A NUMBER OF COMPOUNDS OF SN WITH GROUP IV ELEMENTS (SNSE,
  SNTE, ETC.) WERE STUDIED AND INTERPRETED IN TERMS OF THE CHEMICAL SHIFT
  AND QUADRUPOLE SPLITTING OF THE CORRESPONDING MATERIALS. THUS IN THE
  CASE OF THE DICHALCOGENIDES THE CHEMICAL SHIFT DIMINISHED WITH
  INCREASING IONICITY OF THE CHEMICAL BOND, AS PREDICTED BY THEORY. NO
  TRACE OF THE COMPOUND SN SUB2 SE SUB3 WAS FOUND, ONLY A SUPERPOSITION OF
  THE SPECTRA OF SNSE AND SNSE SUB2.

UNCLASSIFIED

BOLTENKOV, Ye. M.

medicine

SO: JPRS 54435
9 NOV 71   UDC: 616-062.001.11

SOME METHODOLOGICAL ISSUES PERTAINING TO PATHOLOGY IN THE LIGHT OF THE CONCEPTS
ON FORMS OF ORGANIZATION OF LIFE

[Article by G.I. Tsaregorodtsev, Ye. M. Boltenkov, Moscow, Vestnik Akademii Medi-
tsinskikh Nauk SSSR, Russian, No 9, 1971, pp 55-61]

The cardinal general biological and philosophical problems of the essence
of life are closely linked and intertwined with the theoretical and methodolo-
gical aspects of medicine. Success of the latter relies on disclosure, on the
depth of understanding, and practical conquest of the mechanism of vital
phenomena.

Every new line added to our knowledge about the basic aspects of life
is the route along which additional knowledge can be gained as to the causes
and mechanisms of disease, new skill can be acquired to treat and prevent them.
Definition of information about the essence of life could stimulate the search
for and awareness of a heretofore unknown class of possible disturbances in
vital activity, methods of investigating them, means of preventing and removing
them.

The influence of conceptions on the essence of life on medicine proceeds
in several directions. On the one hand, through dissemination and refraction
in it of the most general and basic positions on the nature of life, on the
other hand, in the course of penetration of biological concepts into medicine,
when substantiating the theory and practice of medicine with such extremely
important general biological positions as the principle of adaptation of the
organism to its environment, the principle of evolution of living matter, its
organization, etc.

Both these aspects of interaction between concepts on the essence of life
are closely interrelated. The methodological principles on the basis of which
we evolve general concepts on the nature of life are based not only on philo-
sophical positions but also they are a generalization of the data in biological
sciences related to the internal dialectical development of biological know-
ledge as a whole.

By virtue of this correlation, general biological principles considered
in their methodological aspect become, to some extent, the methodological prin-
ciples of theoretical pathology.

- 43 -

_3

USSR   UDC 577.1:615.7/9

ZALESOV, V. S., FRIDMAN, A. L., IVSHINA, T. N., IVSHIN, V. P., TARTAKOVSKIY,
V. A., PLAKSINA, A. N., and BOLTIK, T. V.

"Synthesis and Study of the Physiological Activity of Organomercury Nitro
Compounds. I. Analysis of the Molecular Complexes of bis-(Trinitromethyl)-
mercury"

Izv. Yestestvennonauchn. in-ta pri Permsk. un-te (News of the Institute of
Natural Sciences, Perm University), 1970, 14, No 10, pp 159-168 (from RZh-
Biologicheskaya Khimiya, No 9, May 71, Abstract No 9 F1876 from the résumé)

Translation: Synthesized molecular complexes of bis-(trinitromethyl)-mercury
with diethyl-N-nitrosamine, diethylsulfone, dimethylsulfoxide, tetrahydro-
furane, dioxane, and hexamethylenetetramine were found to be lacking in
neurotropic, anticonvulsive, and antitremor action in mice and rats but
possessing weak antimicrobial activity (E. coli, staphylococci) and high
toxicity for mice after intraperitoneal injection (LD$_{50}$ 14.8 to 24.5 mg/kg
or peroral administration (55 to 124 mg/kg) and for rats after peroral ad-
ministration (51.4 to 305 mg/kg). Two preparations at toxic doses mani-
fested weak analgesic action.
1/1

1/2   035   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--BOLT AMPERE CHARACTERISTICS OF AMORPHOUS LAYERS BASED ON A PRIMEII
   B PIMEIV-C PRIMEV TERNARY SYSTEMS -U-
AUTHOR-(05)-BARYSHEV, V.G., BOLTIYETS, N.A., BORSCHEVSKIY, A.S.,
   GORYUNOVA, N.A., ORESHKIN, P.T.
COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 372-5

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--AMORPHOUS SEMICONDUCTOR, VOLT AMPERE CHARACTERISTIC, THIN FILM
   SEMICONDUCTOR, ARSENIDE, GERMANIUM COMPOUND, CADMIUM COMPOUND,
   PHOSPHIDE, PULSE SIGNAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0088   STEP NO--UR/0449/70/004/002/0372/0375

CIRC ACCESSION NO--AP0105174
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0105174

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AMORPHOUS LAYERS (2-6 MU THICK)
WERE PREPD. BY VACUUM SPUTTERING OF CDGEAS SUB2, ZNGEAS SUB2, AND CDGEP
SUB2 ON GALSS SUBSTRATES AND WERE PROVIDED WITH EVAPD. METAL ELECTRODES
(SN, PB). THE FILM COMPNS. DID NOT CORRESPOND TO THOSE OF THE INITIAL
SUBSTANCES; THE CONTENT OF THE LEAST VOLATILE COMPONENT (GE) WAS
DECREASED. ON THE DYNAMIC CURRENT VOLTAGE CHARACTERISTICS OF THE FILMS,
SWITCHING FROM THE CUTOFF TO THE OPEN STATE WITH MEMORY WAS FOUND. THE
CHARACTERISTICS WERE NOT AFFECTED BY CHANGES IN FREQUENCY OF 3 ORDERS OF
MAGNITUDE. THE THRESHOLD OF NEG. RESISTANCE IN THE FILMS STUDIED WAS
SIMILAR TO 2 TIMES 10 PRIME4 V-CM. THE CURRENT VOLTAGE CHARACTERISTICS
STUDIED WITH RECTANGULAR PULSES SHOWED THAT THE MEMORY IS PRESENT FOR
PULSE DURATION GREATER THAN 4 TIMES 10 PRIME NEGATIVE6 SEC AND THAT THE
BREAKDOWN VOLTAGE INCREASES WITH DECREASING PULSE DURATION. THE
SWITCHING FROM THE CUTOFF TO THE OPEN STATE IS DETD. BY AN ACCUMULATED
CHARGE; I.E., IT DEPENDS ON BREAKDOWN VOLTAGE AS WELL AS ON BREAKDOWN
CURRENT.   FACILITY: FIZ. TEKH. INST. IM. IOFFE, LENINGRAD, USSR.

UNCLASSIFIED

Acc. Nr:
A T0018318   Abstracting Service: Ref. Code:
                CHEMICAL ABST.*5-70*   *UR0020*

B

103334c   Preparation of CdSiAs$_2$ in the vitreous state. Bol-
tovets, N. S.; Goryunova, N. A.; Prochukhan, V. D.; Ser-
ginov, M. (Fiz.-Tekh. Inst. im. Ioffe. Leningrad. USSR).
Dokl. Akad. Nauk SSSR 1970, 190(3), 619-20 [Phys Chem]
(Russ). A vitreous form of CdSiAs$_2$ is produced by hardening a
melt contg. stoichiometric amts. of the elements and also CdSiAs$_2$
which is prepd. according to a method described by G. K. Aver-
kieva, *et al.* (1969). This semiconductor possesses a softening
temp. around 500°, which significantly exceeds the softening
temp. of other glasses of this type.   C. J. Steinberg

REEL/FRAME
19800020

USSR   UDC 636.22/28:576.8.097.29

BOLTUSHKIN, A. N., KOVAL'SKAYA, M. G., LUPANDINA, K. N., and STUPNIKOV, V. D.,
Leningrad Veterinary Institute; Leningrad Oblast' Veterinary Laboratory

"Fusariotoxicoses of Cattle"

Abstract: For a number of years, fusariotoxicoses of cattle that developed
as a result of consumption of straw, grain, and stubble infected with Fusarium
fungi have been observed in the USSR. In 1967-69, fusariotoxicosis of cattle
occurred at the Experimental Model Farm Kolozhitsy in Volosovsk Rayon,
Leningrad Oblast', after the cattle had been driven to pasture on a har-
vested rye field. The symptoms and pathological-anatomical changes in the
diseased cattle were identical with those observed in cattle upon experi-
mental feeding of grain infected with Fusarium sporotrichiella. Symptomatic
treatment was applied. F. graminearum and F. oxysporum were isolated from
samples of straw stalks, ears, and rye grains collected from the field and
used as feed by the cattle. The degree of infection of the feed with these
fungi was 40-100%. The cultures of fungi that were isolated were considered
toxic on the basis of lethality for Paramecia caudata and the effect on the
1/2

USSR

BOLTUSHKIN, A. N., et al., Mikologiya i Fitopatologiya, Vol 5, No 1, 1971, pp 75-76

skin of rabbits of ether extracts of the fungi. Similar symptoms were shown in 1962 by cattle on the farm in question, but the disease was not identified then.

USSR

BOLTUSHKIN, A. V., Instructor

"Experimental Study of the Behavior of a Spherical Shell Loaded by a Con-
centrated Tangential Force and a Bending Moment"

Abstract: The paper is written in an attempt to develop a method of cal-
culating plastically deformable systems in accordance with force-displacement
diagrams. An experimental study is made of the case of loading a spherical
shell by a concentrated complex load consisting of a tangential force and
a bending moment. Graphic relations are derived for determining the be-
havior of the structure with a change in load from zero to limiting values.
A comparative analysis is made of the deformed state of the shell when it
is loaded by a pure bending moment and when it is loaded by the complex
load described above. From the results of the experiments a curve is
plotted for a dimensionless force parameter as a function of a geometric
parameter. This curve can be used to estimate the carrying capacity of a
shell loaded by a tangential force and a bending moment.

1/1

USSR

UDC 615.917:547.234.9'222.2

ABRAMOVA, ZH. I., CHERNYY, Z. KH. and BOLTUSHKINA, L. A., Institute of Labor
Hygiene and Occupational Diseases, Leningrad

"Pathogenesis of Granosan Intoxication"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 11, 1972, pp 21-24

Abstract: The effect of granosan was studied by subcutaneous injection of
5 mg/kg twice a week into male white rats weighing 180-240 grams and intra-
peritoneal injection into male mice weighing 18-25 grams of 5 mg/kg daily for
20 days. The threshold of electrical stimulation was measured, the behavioral
effect of phenamine, apomorphine and reserpine was studied and urinary levels
of 5-hydroxyindole acetic acid, epinephrine and norepinephrine were studied.
Serotonin levels were measured in brain and stomach tissues. It was observed
that changes included increased irritability, lessened effect of phenamine,
apomorphine and reserpine action compared to controls, and altered tryptophan,
serotonin and catecholamine metabolism, although no change in norepinephrine
levels in the brain was found.

1/1

USSR

UDC 539.216.22:546

IL'YUSHENKO, L. F., and BOLTUSHKIN, A. V., Institute of Solid State and Semiconductor Physics, Academy of Sciences BSSR

"Electric Deposition of Films of Binary Alloys of Metals of the Iron Group With Chromium"

Abstract: Since there was no data in the literature on electrolytic magnetic films containing chromium, this study was made to show conditions necessary to produce Fe-Cr, Ni-Cr, and Co-Cr films of various compositions and study the dependence of their magnetic properties on chromium content. It is noted that magnetic alloys based on metals of the iron group doped with chromium have high magnetic permeability and low coercive force. Upon the introduction of chromium into an alloy, its corrosion resistance and specific electrical resistance are increased. Films of these materials can be applied in computer and UHF technology. Graphs are given showing the chromium content in percent and the coercive force of the films as a function of film thickness. With an increase in the film thickness to 2000 Å, there is a considerable rise in the
1/2

USSR

IL'YUSHENKO, L. F., and BOLTUSHKIN, A. V., Izvestiya Akademii Nauk BSSR, Seriya Fiziko-Matematicheskikh Nauk, No. 6, 1970, pp 125-128

coercive force and then a gradual drop to a certain constant value. This behavior is associated with changes in the composition and structure occurring in the film with an increase in its thickness. The change in the saturation induction and coercive force of films with a thickness of 2000 Å as a function of chromium content was measured and showed that an increase in chromium content leads to a drop in saturation induction. The coercive force of Co-Cr-films rises with an increase in concentration, and in Fe-Cr-films there is first a growth in the coercive force with an increase in concentration and then a smooth drop, beginning with 7-8% Cr. This behavior is attributed to a change in the structure of the alloy.

2/2

USSR

BOLTUSHKINA, L. A., ABRAMOVA, Zh. I., PROKHOROV, V. N., and CHERNYY, Z. Kh.

"Ulcerogenic Effect of Chlorophos"

V sb. Nauchn. sessiya, posvyashch. itogam raboty Leningr. NII gigiyeny truda
i prof. zabolevaniy za 1968-1969 gg., 1970. Tezisy dokl. (Scientific Session
Devoted to the Results of the Work of the Leningrad Scientific Research In-
stitute of Labor Hygiene and Occupational Diseases for 1968-1969, 1970: Sum-
maries of Papers -- Collection of Works), Leningrad, 1970, pp 29-30 (from
RZh-Farmakologiya, Khimoterapevticheskiye Sredstva, Toksikologiya, No 4,
Apr 71, Abstract No 4.54.709 by M. M. AVKHIMENKO)

Translation: Chlorophos in a dose of 150 mg/kg for 10 days was administered
internally to male rats. Findings: change in acidpepsin factor; positive
Pauls' index; inhibition of blood cholinesterase activity; insignificant
changes in serotonin content of subcortical brain formations and gastric
tissues. Under the combined action of chlorophos and ulcerogenic factors
(reserpine 5 mg/kg, atophan 500 mg/kg, stress) destructive lesions of the
gastric wall were more pronounced. The authors conclude that chlorophos
affects the gastrointestinal tract.

1/1

USSR

UDC   681.325.65

BOLTYANSKIY, A. A., PSHENICHNIKOV, Yu. V., SKOBELEV, O. P.

"Multichannel Analog-Digital Converters Based on Test Transient Processes
in Measurement Circuits"

Novosibirsk, Konf. po avtomatiz. nauch. issled. na osnove primeneniya EVM,
1972--sbornik (Conference on Automating Computer-Based Scientific Research,
1972--collection of works), 1972, pp 77-83 (from RZh-Avtomatika, Teleme-
khanika i Vychislitel'naya Tekhnika, No 11, Nov 72, abstract No 11B301)

Translation: The paper demonstrates the effectiveness of using methods based
on test transient modes in measurement circuits to design multichannel analog-
-digital converters. The methods are formulated on the basis of the simplest
model of pickups and measurement circuits in the form of an aperiodic system;
the method of instantaneous values, the constant time method, the method of
the first derivative, and the method of integral conversion are considered.
The structures of multichannel converters for parametric and oscillator
pickups developed on the basis of these methods are described. Two illus-
trations, bibliography of two titles. L. P.

1/1

- 50 -

TITLE--PHASE COMPOSITION OF MAGNESITE CHROMITE REFRACTORIES WITH GUNITE
  COATINGS AFTER SERVICE IN THE ROOF OF AN OPEN HEARTH FURNACE -U-
AUTHOR-(05)-PYATIKOP, P.D., PIROGOV, YU.A., BOLTYANSKIY, A.V., GURSKIY,
  G.L., KOBYLKO, V.S.
COUNTRY OF INFO--USSR

SOURCE--OGNEUPORY 1970, 35(3), 37-40

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--OPEN HEARTH FURNACE, SPINEL, OXIDE REFRACTORY, PHASE
  COMPOSITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/0875   STEP NO--UR/0131/70/035/003/0037/0040

CIRC ACCESSION NO--AP0118046
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0118046
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FOR THE COATING OF REFRACTORIES
  GUNITE POWDER OF COMPN. CR SUB2 O SUB3 31.5-7.7, MGO 33.8-42.8, CAO
  0.54-1.6, AL SUB2 O SUB3 4.7-6.5, SIO SUB2 4.2-5.5, AND FE SUB2 O SUB3
  8.5-10.5PERCENT WAS USED. ON THE BRICKS WITH GUNITE COATINGS AFTER
  SERVICE IN THE ROOF OF AN OPEN HEARTH FURNACE 4 STRUCTURAL ZONES WERE
  FOUND: (1) SLIGHTLY CHANGED ZONE, 100-50 MM THICK, (2) THE TRANSITION
  ZONE, 30-60 MM, (3) WORKING ZONE, 15-25 MM, AND (4) GUNITE COATING ZONE,
  20-5 MM. IN THE DIRECTION FROM (1) TO (4) THE CONTENT OF CAO, FEO, FE
  SUB2 O SUB3 INCREASES WHILE THAT OF MGO AND CR SUB2 O SUB3 DECREASES.
  THE MAX. SIO SUB2 CONTENT IS FOUND IN (2). (1) SHOWS THE NONUNIFORM
  GRANULAR STRUCTURE; IT CONSISTS OF PERICLASE (60-70), CR SPINEL (25-30),
  AND SILICATES (10-12PERCENT). THE PERICLASE (0.2-2.5) AND CR SPINEL
  (0.5-3.0 MM) GRAINS ARE CEMENTED WITH A FINE GRANULAR MASS. THE
  SILICATES ARE REPRESENTED BY MONTICELLITE AND RARELY BY FORSTERITE. THE
  HOMOGENEOUS DISTRIBUTION OF PORES OF THE CRACK FORMS IS OBSERVABLE. (2)
  IS ANALOGOUS TO (1) ACCORDING TO THE MINERALOGICAL COMPN. BUT IT DIFFERS
  FROM (1) IN THE FOLLOWING ASPECTS: (1) IT HAS A MORE UNIFORMLY
  DISTRIBUTED PERICLASE GRAINS, (B) THE PERICLASE GRAINS ARE LARGER, (C) A
  CONSIDERABLE HIGHER CONTENT (18PERCENT) OF SILICATES IN WHICH
  MONTICELLITE PREVALIS, (D) THE PRACTICAL ABSENCE OF FINE CRACKS AND ON
  THE OTHER HAND THE PRESENCE OF LARGE AMT. OF PORES OF SIZES 0.03-1 MM.
  (3) IS COMPOSED OF SECONDARY SPINEL, CR SPINEL PERICLASE, AND SILICATES.
   THE SECONDARY SPINELS FORM THE MAIN COMPONENT (63-70PERCENT) WITH BLACK
  GRAINS 0.05-0.3 MM.

UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--16OCT70
CIRC ACCESSION NO--AP0118046
ABSTRACT/EXTRACT--THE CR SPINEL AND SECONDARY SPINEL GRAINS ARE IN CLOSE
CONTACT. THE PERICLASE IN THE FORM OF CORRODED GRAINS IS CLOSELY
PERMEATED WITH THE SECONDARY SPINEL INCLUSIONS. SILICATES ARE PRESENT
AS MONTICELLITE AND MERWINITE. ZONE (4) CONSISTS OF SECONDARY SPINEL
(85-8), CR SPINEL (SIMILAR TO 6), AND SILICATES (6-15PERCENT).
FACILITY: UKR. NAUCH.-ISSLED. INST. OGNEUPOR., KHARKOV, USSR.

UNCLASSIFIED

USSR

B

PYATIKOP, P. D., PIROGOV, YU. A., BOLTYANSKIY, A. V., GURSKIY, G. L., KOBYLKO, V. S.

"Phase Composition of Magnesite-Chromite Refractories With Gunite Coatings After Service in the Crown of an Open-Hearth Furnace"

Moscow, Ogneupory, No 3, Mar 70, pp 37-40

Abstract: Guniting the rear walls of open-hearth furnaces at "Zaporozhstal'" plant has increased their life from 180-200 to 500 and more cycles. The rear wall is gunited with a semidry powder mixture at least once per day. The composition of the powder is: 31.5-37.7% Cr_2O_3, 33.8-42.8% MgO, 0.5%-1.6% CaO, 4.7-6.5% Al_2O_3, 4.2-5.5% SiO_2, 8.5-10.5% Fe_2O_3, weight loss 1.7-3.0%. The powder contains not over 7% particles over 1 mm, 20-25% particles less than 0.071 mm. The binder and moistener used is an aqueous solution of liquid glass with a density of 1.17-1.20 g/cm3. The authors studied the chemical and phase compositions of the magnesite-chromite refractories which had
1/2

USSR

PYATIKOP, P. D., et al., Ogneupory, No 3, Mar 70, pp 37-40

been used in the rear line of the crown of an open-hearth furnace
operating with oxygen injection. Photographs showing the general
appearance and microstructure of the refractories are presented,
as well as a graph of the oxide content of the refractories
after usage. The guniting of the working surface of the refrac-
tories forms a layer of highly refractory materials, protecting
the brick from the effects of dust, preventing deep penetration
of silicate melts into the cold zones of the brick, and conse-
quently decreasing the rate of conversion of the brick and the
intensity of brick wear during service.

2/2

- 54 -

USSR

UDC: 517.934:517.966

BOLTYANSKIY, V. G., Mathematics Institute imeni V. A. Steklov, Academy of Sciences of the USSR

"Optimality Criteria for Discrete Processes"

Abstract: Certain theorems are proved which contain necessary conditions of optimality for processes in controlled objects with discrete time. The resultant optimality criteria are analogous to those which can be found in papers by Propoy, Polak, and others. However, the criteria given in this paper are more general. The necessary extremum conditions contained in the author's article in "Differentsial'nyye Uravneniya", Vol 8, No 9, 1972, are taken as the basis for derivation of these optimality criteria.

1/1

- 2 -

USSR

BOLTYANSKIY, V. G. (Steklov Mathematics Institute, USSR Academy of Sciences)

"Discrete Principle of the Maximum (Method of Local Sections)"

Minsk, Differentsial'nyye Uravneniya; November, 1972; pp 1927-35

ABSTRACT: L. S. Pontryagin's principle of the maximum -- the central result
of the mathematical theory of the optimal control of continuous processes --
has had a substantial effect also on the theory of the optimal control of
discrete processes. There are a number of works in which a discrete principle
of the maximum has been established.

   In this article the author presents a fairly general version of the dis-
crete principle of the maximum. The result obtained is based -- on the one
hand -- on a method of local sections, developed by the author and applied to
controllable processes which are continuous, and -- on the other -- on a
method of pyramids, recently applied by the author to problems of mathematical
programming and the control of discrete processes.

   The article includes 24 equations. There are seven references.

1/1

- 2 -

USSR

UDC 624.012.036:725.36

BOLTYANSKIY, Ye. Z., Chief Departmental Specialist, Central Scientific
Research Institute of Industrial Grain Planning, LYUBAUSKAS, Ya. H., Chief of
the Mechanization Administration, Central Elevator Construction Trust

"An Experimental Silo Structure With Silos 6 Meters in Diameter"

Moscow, Beton i Zhelezobeton (Concrete and Reinforced Concrete), No 9,
September 1971, pp 17-18

Abstract: At the flour combine imeni A. D. Tsypura in Moscow, designed by the
Central Scientific Research Institute of Industrial Grain Planning, has been
built an experimental silo structure 30,000 tons in capacity, with walls of
prefabricated prestressed curvilinear elements. The silo walls were developed
on the basis of proposals by the Main Administration of Specialized Elevator
Construction of the Ministry of Agricultural Construction, RSFSR. In calcu-
lating the rings with respect to strength and crack resistance, a procedure
was adopted which takes into account not only the horizontal stretching forces,
as recommended by the standards, but also the conditional bending moment.
Information is presented on the technology of production of the elements, the
consolidated assembly of the rings, and erection of the silo structure. Work-
ing in two shifts, the rate of erection comprised 24 rings per day. 5 figures
2 tables.
1/1

- 27 -

USSR

UDC 536.421.4+536.421.1

BOLLAKOVICH, B. I.

"Effect of Ultrasonic Processing on the Crystallization of InSb and InAs Alloys"

V sb. Kristallizatsiya i faz. prevrashcheniya (Crystallization and Phase Transformations—collection of works) Minsk, "Nauka i tekhn." 1971, pp 106-110 (from RZh-Fizika, No. 9, 1971, Abstract No. 9E386)

Translation: Ultrasonics (US) has been used to obtain the quasi-binary alloys of InSb and InAs. Short descriptions are given of the use of methods for introducing US oscillations into the alloy and measuring their intensity. Tempered crystallization was conducted in the final stage of short-term synthesis in ampoules under the action of US. The processing of the crystallizing melt by US with an intensity of tenths of a watt per cm^2 did not bring about any change in the general character of the InSb and InAs crystallization; the diagram of their state has a kind of degenerate eutectics under unbalanced conditions. Extensive dispersion of the ingot structure was achieved. It was found, as a result of x-ray structural phase analysis, that in ingots obtained with US processing and with small crystallite dimensions, formation of solid solutions of InSb-InAs with annealing proceeds at a faster rate.

1/1

1/2   009   UNCLASSIFIED   PROCESSING DATE--20NOV70
TITLE--AL'FIYA, A NEW HIGH QUALITY LIQUID SYNTHETIC DETERGENT -U-

AUTHOR-(05)-BELYANOVSKIY, D.M., GETMANSKIY, I.K., LOGIINOVA, N.I.,
   NAYMUSHINA, A.A., KUDYASHOV, A.I.
COUNTRY OF INFO--USSR

SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970, (3), 34-5

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, MATERIALS

TOPIC TAGS--BIODEGRADABLE DETERGENT, AMIDE, FATTY ACID, PHOSPHATE, UREA,
   BLEACHING AGENT/(U)ALFIYA DETERGENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/0441   STEP NO--UR/0319/70/000/003/0034/0035

CIRC ACCESSION NO--AP0128011
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0128011
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE COMPONENTS OF AL'FIYA ARE
  PRIMARY ALKYL SULFATES 8-13. SEC-ALKYL SULFATES 3-8, SYNTHONAL DT-7 (A
  PRODUCT OF OXYETHYLATION OF C SUB10 NEGATIVE13 PRIMARY ALCS.) 0-3,
  SYNTHAMID,5 (MONOETHANOLAMIDES OF SYNTHETIC FATTY ACIDS) 4, NA
  HEXANETAPHOSPHATE 4, UREA 13, ISO-PROH 1, BLEACHING AGENT 0.15, PERFUME
  0.1, AND H SUB2 O TO 100PERCENT.   ALL THE COMPONENTS OF AL'FIYA ARE
  BIODEGRADABLE.   THE WASHING POWER OF A 0.125PERCENT SOLN. OF AL'FIYA IN
  HARD WATER (15DEGREES) AT 50DEGREES WITH WOOL IS 124-130PERCENT OF THAT
  OF NA LAURYL SULFATE.   AL'FIYA CAN BE USED EFFECTIVELY ALSO FOR SILK AND
  SYNTHETIC FABRICS.   THE STABILITY OF AL'FIYA AGAINST TURBIDITY AT
  10DEGREES LASTS GREATER THAN 24 HRS.

UNCLASSIFIED

USSR

BOLYATKO, V. V., LIPUNOV, A. D., MASHKOVICH, V. P., SUVOROV, A. P., TSYPIN, S. G.

"Attenuation of Soft-Spectrum Neutrons in Continuous Shields"

Translation: Soft-spectrum neutron propagation is studied in serpentine
ore on an experimental installation -- an intermediate neutron converter.
Serpentine ore is used as a filler in concrete, and sometimes independently
as a shielding material. The resultant experimental data on the spatial
distribution of neutrons of various energies in serpentine ore agree well
with the results of calculation done by the ROZ-1 computer program using
a specially compiled system of multigroup neutron constants. Only a
slight difference is observed in the relative attenuation of the neutron
flux density for measurements by resonance indicators. M. L.

1/1

USSR

BOLYCHEVTSEV, A. D., DOBRYDEN', V. A. and RAZUMNYY, V. T.

"The Protection of an Object Servicing a Stable Random Stream"

Pribory i Sistemy Avtomatiki. Resp. Mezhved. Temat. Nauch.-Tekhn. Sb. [Automation Devices and Systems. Republic Interdepartmental Thematic Scientific and Technical Collections], 1973, No 27, pp 62-67 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V269)

Translation: The problem of optimization of an algorithm for protection of a single-line queueing system without waiting and with zero servicing time from failures when the input stream is stationary is studied. A condition is produced, establishing the boundary of economic expediency of introduction of protection. An algorithm is constructed which is otimal with respect to the criterion of mean specific expenditures. It is a threshold-type algorithm.   Author's view

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UDC: 681.2.08

BOLYCHEVTSEV, A. D.

"Optimal Discretization of Level-Quantized Random Signals"

Novosibirsk, Avtometriya, No 1, 1973, pp 32-40

Abstract: This article examines the probability indices of the quality of separate measuring operations and discrete measurements as a whole. The problem of optimal matching of quantized intervals and the discretization of continuous random, normally distributed stationary processes is numerically solved for the case of step-by-step interpolation. The method of solution is based on probability estimates of the measured random process over a period of time, and it is assumed that the process contains no regular or non-random components. Formulas are developed for computing the probability quality index for a broad area surrounding the optimum point and for the error in those formulas. It is shown that the optimal step of uniform discretization may be found from the curve of the measurement process correlation function, and a formula for computing the step is given.

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Reliability Theory

BOLYCHEVTSEV, A. D., BOLYCHEVTSEV, E. M., DOBRYDEN', V. A.

"Quantitative Estimates of Overshoot Duration Distribution"

Abstract: Simple quantitative approximations were found for the distribution density of the blip duration of a stationary normal random process having continuously twice differentiable realizations for a fixed level. A new quantitative estimate of the distribution density of the overshoot duration of a normal stationary random process for a given level was obtained in the following form:

$$p(t) = \frac{\omega}{2\beta^2\sqrt{1 - R^2}} \left\{ \left[(\beta b)^2 + \frac{k}{2} \right] [1 - \Phi(\beta b)] - \frac{\beta b}{\sqrt{\pi}} \exp[-(\beta b)^2] \right\} \exp \left[- \frac{1 - R}{1 + R} \frac{u^2}{2\sigma^2} \right],$$

where all the parameters are expressed in terms of the normalized level u/σ, the normalized correlation funciton $R(t)$, its derivatives and ω. This estimate differs from the known estimates (of the same degree of strictness) by its
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simple, clear form. The estimate is close to the known Rice approximation [V. I. Tikhonov, Vybrosy sluchaynykh protsessov, Nauka Press, 1970], but in contrast to the Rice approximation, it approaches zero at $t \to \infty$. Different descriptions of the conditional probabilities of treatment of the horizontal and vertical windows lead to essentially different quantitative solutions.

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Reliability Theory

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BOLYCHEVTSEV, A. D., BOLYCHEVTSEV, E. M., DOBRYDEN', V. A.

"Quantitative Estimates of Overshoot Duration Distribution"

Abstract: Simple quantitative approximations were found for the distribution density of the blip duration of a stationary normal random process having continuously twice differentiable realizations for a fixed level. A new quantitative estimate of the distribution density of the overshoot duration of a normal stationary random process for a given level was obtained in the following form:

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Magnesium

USSR

UDC 541.45;546.46:6 1.984.5

BOLYNETS, F. K., UDALOVA, L. V., ARANOVSKIY, L. I., and ISACHEV, V. P.

"Study of the Kinetics of Compacting of Magnesium Oxide with Added Lithium Fluoride at Various Hot Pressing Temperatures"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, Vol 8, No 2, 1972, pp 285-289

Abstract: The kinetics of compacting of magnesium oxide with added lithium fluoride (1.0 wt.%) by hot pressing in the 80-1100° C temperature interval was studied. The addition of lithium fluoride increases the rate of compacting of magnesium oxide beginning at 650° C.

At 850-1050° C, 3 stages of compacting are observed with slopes of kinetic curves in coordinates $\log \Delta L/L_0$ from $\log \tau$ equal to 0.95-1.40; 0.33-0.36; 0.1 respectively to intervals of densities of 0.96-0.97; 0.97-0.995 and over 0.995. Processes of recrystallization of magnesium oxide with the addition of lithium fluoride during hot pressing are studied. The activation energy of the process of recrystallization, equal to 25.7 kcal/mol, is determined from the temperature dependence of the increase in grain size, as 25.7 kcal/mol.

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USSR   UDC: 539.142.3

BOLYNSKIY, V. Kh.

"A Nuclear Magnetic Resonance Spectrometer"

Translation: This Author's Certificate introduces: 1. A nuclear magnetic
resonance spectrometer which contains a device for stabilizing a fixed mag-
netic field with an external reference specimen, an ampule with receiving
circuit, a high-frequency oscillator, a reference voltage source, and a
module for scanning and displacement of the field. As a distinguishing
feature of the patent, resolution stability is improved by locating another
reference specimen with receiving circuit in the gap of the magnet close to
the first reference specimen on a line passing through the center of the
first specimen parallel to the axis of the ampule. The receiving circuit
in the second reference specimen is connected to a spin generator system.
Connected to the low-frequency amplifier of the spin generator is a fre-
quency-to-voltage converter to which compensating coils are connected in

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USSR

BOLYNSKIY, V. Kh., USSR Author's Certificate No 329407

pairs in two planes which are symmetric relative to the reference specimens, parallel to the surfaces of the pole pieces of the magnet, and tangent by pairs on the sides perpendicular to the axis of the ampule. The coils are wound in layers normal to the lines of force of the fixed magnetic field. 2. A modification of this spectrometer distinguished by the fact that compensation for scanning and displacement of the field is provided at the point of location of the second reference specimen by placing this specimen together with the receiving circuit in a solenoid connected at the output of the module for scanning and displacement of the field.

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USSR   UDC 669.295.472

ANTIPIN, L. N., BOLYNSKIY, V. V., MANSKIY, Ye. G., CHUB, V. Ya., and
KLIMENYUK, V. A.

"Anode Effect During Electrolysis of Oxyfluorotitanate Melts"

Sb. tr. Vses. n.-i. i proyektn. in-t titana [Collected works of All-Union
Scientific-Research and Planning Institute for Titanium], 6, 1970, 77-81,
(Translated from Referativnyy Zhurnal-Metallurgiya, No. 1, 1971, Abstract
No 1 G193 by the authors).

Translation: The causes for the formation of the anode effect during
electrolysis of oxyfluorotitanate melts on a carbon-graphite anode are
studied. The anode effect arises as a result of formation of non-conducting
oxides such as COF_2 on the surface. The formation of these compounds is

accompanied by worsening of wetability and leads to passivation of the
anode. Study of the critical D in oxyfluorotitanate melts was performed
on an automatic installation recording the volt-ampere functions. Primary
influence on the value of critical D is that of the concentration of
TiO_2 in the electrolyte. Experimental results are presented demonstrating

the influence of TiO_2 concentration on critical D.   4 figures; 14 biblio.

refs.

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Acc. Nr.: _AP0042567_

Ref. Code: _UR 0293_

JPRS 5-16 2

Measurements of Intermediate- and High-Energy Particles

(Abstract: "Measurements of Charged Particles of Intermediate and High Energies," by A. D. Bolyunova, A. D. Verevkin, Yu. I. Gal'perin, L. S. Gorn, L. S. Zhurina, I. D. Ivanov, R. N. Isayeva, I. P. Karpinskiy, R. A. Kovrazhkin, V. V. Temnyy, B. I. Khazanov, A. V. Shifrin and F. K. Shuyskaya; Moscow, Kosmicheskiye Issledovaniya, Vol VIII, No 1, 1970, pp 126-135) [Note: This is part of a sectionalized article "Study of Geoactive Corpuscles and Photoelectrons on the Satellite 'Kosmos-261'," Kosmicheskiye Issledovaniya, Vol VIII, No 1, 1970, pp 104-136]
   This article describes the RIE-205 scintillation spectrometer for electrons of intermediate energies, the RIP-802 scintillation spectrometer for protons and the RIG-III lead-shielded Geiger counter. The RIE-205 instrument measured electrons in the ranges 20-45, 45-85, 85-120 and 120-150 keV and the total intensity of electrons with an energy greater than 150 keV (geometry factor $2 \cdot 10^{-3} cm^2 \cdot$ sterad). The RIP-802 instrument measured protons in the ranges 0.30-0.45, 0.45-0.70, 0.70-0.95 and 0.95-9 MeV with a geometry factor of $1.5 \cdot 10^{-2} \cdot$ sterad. The RIG-III instrument measured

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protons with $E > 50$ MeV and hard electrons. In the radiation belts and auroral zones the instruments measured the fluxes and energy spectra of electrons and protons, their distribution by pitch angles and spatial-temporal characteristics. It was possible to determine the latitude varia- tion of the intensity of injected electrons, the pitch distribution of intensity for auroral zone electrons and the differential electron spectra. For example, the electron fluxes measured with the RIE-205 spectrometer can be assigned to the following groups: a) trapped electrons in the inner zone ($L \leqslant 2.5$) were registered for the most part in the region near the Brazilian anomaly; their flux for an energy $E > 150$ keV attained 10^8 parti- cles/cm^2·sec. and was highly dependent on pitch angle; a pronounced maximum was observed for pitch angles 90°; b) trapped electrons in the outer zone $2.5 \leqslant L \leqslant 7$, also with a maximum intensity for pitch angles of 90°; in many cases quasitrapped particles were registered in the region of in- variant coordinates $h_{min} \leqslant 100$ km with intensities up to $2 \cdot 10^6$ particles/ cm^2·sec·sterad; c) sporadic hard electrons injected into the atmosphere in the middle latitudes; in these cases the mean energy was usually ~ 100 keV and the particle flux attained 10^5 particles/cm^2·sec; d) electrons of in- termediate and high energies injected into the atmosphere in the high latitudes; they are frequently observed near the auroral zone.

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Acc. Nr.: _AP0042570_

Ref. Code: _UR0293_

JPRS 5262

Study of Geoactive Corpuscles and Photoelectrons

(Abstract: "Study of Geoactive Corpuscles and Photoelectrons on the 'Kosmos-261' Satellite," by A. D. Bolyunova, M. L. Bragin, Yu. I. Gal'-perin, V. A. Gladyshev, N. V. Dzhordzhio, G. N. Zlotin, I. N. Kiknadze, R. A. Kovrazhkin, T. M. Mulyarchik, Yu. N. Ponomarev, V. V. Temnyy, N. I. Fedorova, Yu. P. Shilyayev, F. K. Shuyskaya and R. V. Shulenina; Moscow, Kosmicheskiye Issledovaniya, Vol VIII, No 1, 1970, pp 104-136)

     The artificial earth satellite "Kosmos-261" was used in a study of low-energy geoactive corpuscles and fresh photoelectrons and their inter-action with the earth's upper atmosphere. The satellite was launched on 20 December 1968. Orbital inclination to the equator was 71°, so that for a relatively long time it moved almost along a tangent along the auroral zone over the Soviet Far North, making it possible to increase the volume of simultaneous measurements from the satellite and from ground observa-tories. The storage regime made it possible to extend continuous measure-ments for periods of several revolutions, including passes over the auroral zones in the Arctic and Antarctic and over the polar caps as far as in-variant geomagnetic latitudes 82-85°. During the initial period the satellite apogee was at 670 km and perigee was at 217 km, but it finally

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burnt up upon entering into the dense layers of the atmosphere on 12 February 1969 after making 857 revolutions of the earth. The experiment lasted 53 days. The orbit was such that in the northern hemisphere middle and high latitudes the satellite moved below or close to the maximum of the Foregion so that ionospheric electron density along its trajectory and its variations could be determined in a number of regions on the basis of measurements by ground ionospheric stations. The period of the experiment included both quiet periods and those with strong disturbances. The experiment was conducted under the "Program of Cooperation Among Socialist Countries in the Field of Space Research and Peaceful Use of Space." Ground measurements were made in Bulgaria, Hungary, East Germany, Poland, Rumania, USSR and Czechoslovakia. Observatories and special expeditionary stations in the USSR participated: in Yakutia, the Far North, Siberia and middle latitudes. The article cited below is divided into four parts: 1) Description of Experiment; 2) Measurement of Low-Energy Electrons; 3) Measurement of Low -Energy Ions; 4) Measurements of Charged Particles with Intermediate and High Energies. Parts 2)-4) are essentially independent articles and are abstracted separately.

19760552

USSR   UDC: 621.396.74

ROMSHTEYN, B. D., BORISOV, A. S., KIRIK, G. A.

"Signal-to-Noise Ratio in Primary Wide-Band Channels Made up
of n Transducer Sections"

Translation: The authors examine a procedure for determining
the numerical characteristics of distribution of the signal-
-to-noise ratio for communications channels consisting of n
transducer sections from the known numerical characteristics
of the distribution function of interference in the channel
comprised of a single transducer section. Resumé.

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USSR   UDC 613.633+614.715]-07:615.47

SAVINA, A. A. and BOMSHTEYN, E. M., All Union Scientific Research Institute
of Labor Protection, of the All Union Council of Trade Unions, Leningrad

"Method of Clarifying AFA Filters in Determining Dust Concentration and
Dispersity"

Moscow, Gigiyena i Sanitariya, No 11, 1970, pp 60-61

Abstract: AFA [analytical aerosol filters] made of petryanov filter material
are widely employed. Features of the filters include: hydrophobicity (ob-
viating the need for drying them) and resistance to chemical and aggressive
agents.

Dust count concentrations (by number of particles) were determined by AFA-D-3
filters in the atmosphere and in the air of work premises. Dispersity of
dust was also measured. These filters are recommended for trapping and
counting dust particles in the 0.5-100 micron size range. When necessary,
AFA-V-18 or AFA-V-10 filters can be used for the same purpose, with the
requirement that before sampling, these filters must be pressed, for example,
with a simple hydraulic press at a pressure of about 50 kg/cm^2. This drives
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SAVINA, A. A., and BOMSHTEYN, E. M., Gigiyena i Sanitariya, No 11, 1970, pp 60-61

out air bubbles in the filters. The dust increment on an 18 cm^2 filter (AFA-V-18) can be taken as 0.1-1 mg, depending on the dispersity of the dust.

The filters were placed on tracing cloth, covered with laboratory slide glasses, and placed in a holder. The holder was placed in a beaker containing acetone. The beaker was kept in a water bath for not more than 1 minute.

2/2

TITLE--EXPERIENCE FROM SURGICAL INTERVENTION ON SHIPS SAILING AT LOW
LATITUDES -U-

AUTHOR-(03)-NOVOZHILOV, G.N., BONADYSEV, N.Z., DODOCHKIN, N.A.

COUNTRY OF INFO--USSR

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CIRC ACCESSION NO--AP0135312   UNCLASSIFIED   PROCESSING DATE--27NOV70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AT LOW LATITUDES THE POST
OPERATIVE COURSE OF THE DISEASE WAS CHARACTERIZED BY THE BANDAGE
COVERING THE INCISION BEING SOAKED THROUGH WITH PERSPIRATION.   THE
INCREASED LEVEL OF PERSPIRATION WHICH CAUSES MACERATION AND LOWERING OF
THE ACIDITY OF THE SKIN CREATES FAVORABLE CONDITIONS FOR THE VITAL
ACTIVITY OF MICROORGANISMS AND FOR THEIR PENETRATION INTO THE INCISION.
IN ORDER TO PREVENT INFECTION OF THE INCISION IT WAS NECESSARY EACH DAY
UNTIL THE REMOVAL OF THE STITCHES TO CLEAN THE SKIN AND CHANGE THE
BANDAGE. THE STITCHES WERE REMOVED ON THE SEVENTH TO EIGHTH DAY. MOST
OF THE PATIENTS (61 PERSONS) STAYED IN THE INFIRMARY FOR 8 TO 11 DAYS;
THE REMAINING ONES STAYED 12 TO 14 DAYS.   THE LONGER TREATMENT OF THE 7
PATIENTS WAS IN CONNECTION WITH SUPPURATION OF THE INCISION FROM THE
OPERATION. THE APPEARANCE OF SUPPURATION DURING THE POST OPERATIVE
PERIOD, IN SPITE OF THE CAREFUL INDIVIDUAL ATTENTION, APPARENTLY IS
EXPLAINED BY THE INFECTION OF THE INCISION AS A CONSEQUENCE OF THE
INCREASED LEVEL OF PERSPIRATION UNDER THE UNFAVORABLE MICROCLIMATIC
CONDITIONS. NO OTHER COMPLICATIONS WERE OBSERVED AFTER THE OPERATIONS.
UPON RECOVERING THE PATIENTS RECEIVED A SHORT PERIOD OF REST AND
RELAXATION AND WERE FREED FROM HEAVY WORK AND FROM STANDING WATCH. IN
CONCLUSION WE FEEL THAT IT IS NECESSARY TO NOTE THAT IN ORDER TO BE ABLE
TO OPERATE EARLIER IN THE CASE OF ACUTE APPENDICITIS THE MEDICAL
INDOCTRINATION WORK SHOULD INCLUDE CONSTANT REMINDERS TO THE PERSONNEL
OF A SHIP TO GO IMMEDIATELY TO THE MEDICAL SECTION IN THE CASE OF THE
OCCURRENCE OF ACUTE PAINS IN THE STOMACH.

UNCLASSIFIED

BONASHEVSKAYA, T. I., and TABAKOVA, S. A., Institute of General and Communal
Hygiene imeni A. N. Sysin, Academy of Medical Sciences USSR, Moscow

"Morphological Changes in the Organs of White Rats Produced by Inhalation of
Chlorophos in Microconcentrations"

Abstract: A 3-month long exposure to air containing 0.2 mg of chlorophos per
m3 causes marked tissue pathology in rats. In the lungs, capillaries in inter-
alveolar septa are enlarged and alveolar epithelium is edematous. In the liver,
lymphoid tissue in the periphery of lobules is enlarged, blood cells are pres-
ent in perivascular spaces, and bile duct epithelium is hypertrophied. In the
kidneys, glomeruli are deformed, Bowman's capsules are filled with proteins, the
nuclei of tubular cells are pyknotic and the cytoplasm dense and vacuolized, and
desquamated epithelial cells and hyaline casts are present in the tubular lumen.
In the thyroid gland, the parenchyma is separated into islands made of 2-4 big
follicles or a larger number of small follicles. The primary cause of these
pathological changes is increased vascular permeability. After inhalation of
air containing 1 mg of chlorophos per m3, all the morphological alterations
become more pronounced. However, no pathology is observed if chlorophos concen-
tration is 0.02 mg per m3 of air.
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